

THE JOURNAL

OF

THE DEPARTMENT OF AGRICULTURE,

VICTORIA, AUSTRALIA.

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DEPARTMENT OF AGRICULTURE, VICTORIA

RED POLL DAIRY HERD

YOUNG BULLS FOR SALE

TO VICTORIAN DAIRYMEN

DAM.	Date of Birth.	RECORD OF DAM.				PRICE.
		Milk lbs.	Average Test.	Fat lbs.	Butter lbs.	
Sired by "NICOTINE" by ACTON DEWSTONE (imp.)						
Ardath ...	15.1.15	6261	4.8	302.91	345½	15 Guineas
India ..	11.3.15	6150	4.36	268.5	306	13 "
Connecticut ...	3.4.15	6780	5.36	364.0	415	18 "
Turka ..	16.5.15	6395	4.9	316.07	360½	15 "
Cameo ...	23.5.15	5536	5.10	285.60	325½	14 "
Sumatra ...	24.5.15	9232	4.67	431.9	482¾	21 "
Mexicana ...	1.6.15	8641	4.6	399.75	455½	19 "
Samorna ...	12.6.15	5490	4.9	271.76	309¾	13 "
Netherlana ...	21.6.15	6903	4.2	291.73	332½	14 "

The prices are based approximately on the actual milk and butter fat record of the dam at the rate of 1s. per lb. of butter *fat* yielded.

For History and Record of the Herd see Journal of Agriculture, September, 1914.

**Calves under six months old may be purchased
for delivery at that age.**

Inspection by arrangement with Mr. E. STEER, Herdsman,
Central Research Farm, Werribee.

Application for purchase to DIRECTOR OF AGRICULTURE MELBOURNE.



THE JOURNAL
OF
The Department of Agriculture
OF
VICTORIA.

Vol. XIII. Part 9. 10th September, 1915.

STANDARD TEST COWS.

Third Annual Report on the Testing of Pedigree Herds, conducted
by the Department of Agriculture, Victoria, for the year ended
30th June, 1915.

By W. A. N. Robertson, B.V. Sc., Chief Veterinary Officer.

The completion of the third year of the conduct of Standard Herd Testing, marking as it does the termination of the drought, will long be remembered by dairy farmers who, from the severity of the period passed through, find themselves with depleted herds and stocks of fodder conspicuous by their absence. The period might be described as the end of the first chapter of a very severe lesson. The second chapter has yet to be written, and it will be a long one, for it must cover the period of re-stocking. Hope, however, will be a very strong factor for the success of the future, and, if directed in the right channels, the past losses may yet prove a blessing in disguise. The dairymen have it in their own hands to build the industry on a firmer footing than has hitherto existed.

For some considerable time past the average cow of Victoria has been kept at a loss to the farmer. In spite of this, dairying has been a paying industry, yet the full profits possible have not been obtained, for the cows above the average have been carrying and paying for many below, before a profit could be shown. Various estimates have been made from time to time as to the cost per annum of keeping a cow. It, of course, varies in different districts. For purposes of illustration, let the cost be stated at £8 per annum. This means that a cow will be required to give 160 lbs. of butter fat at 1s. per lb. before she pays for her keep and begins to give a profit to her owner. If she gives less than this amount then she is producing butter fat at more than 1s. per lb.,



Scottish Queen of Gowrie Park.

OWNER—W. P. BRISBANE.

Record.	Days in Milk.	Weight of Milk (lbs.).	Average Test.	Butter Fat (lbs.).	Commercial Butter (lbs.).	Weight of Milk Last Day of Test (lbs.).
1914 ..	273 ..	12,022 ..	4.87 ..	585.13 ..	667 ..	21



Ida of Gowrie Park.

OWNER—W. P. BRISBANE.

Record.	Days in Milk.	Weight of Milk (lbs.).	Average Test.	Butter Fat (lbs.).	Commercial Butter (lbs.).	Weight of Milk Last Day of Test (lbs.).
1914 ..	273 ..	10,867½ ..	5.1 ..	554.89 ..	632½ ..	23
1915 ..	273 ..	11,917½ ..	5.08 ..	605.05 ..	689½ ..	26½

and some other cow in the herd has to make good the difference. If, on the other hand, she is making, say, 320 lbs. of butter fat at a cost of £8, she is producing it at 6d. per lb., and giving a profit of 6d. per lb. to her owner, or £8 per annum. It is therefore clear that to attain maximum results, the "passenger" cow must be eliminated. This may be done in two ways—first, by testing and detecting the useless individual and putting her out of the milking shed; and secondly, by breeding up to better milking qualities. The effect cannot be immediately attained by either way, but a firm foundation can be laid to save both time and labour, and the present is an opportune time to lay such foundation.

Fortunately, the effect of drought was first felt amongst the "duffers," and many a useless individual has found her proper place during recent months. The remainder will not, of course, all be good milkers, yet they will all be needed, and may be potential for good by breeding to bulls with milking characteristics.



Bonny Bess of Gowrie Park. Fairy of Willow Vale.

OWNER—W. P. BRISBANE.

Bonny Bess.

Record.	Days in Milk.	Weight of Milk (lbs.).	Average Test.	Butter Fat (lbs.).	Commercial Butter (lbs.).	Weight of Milk Last Day of Test (lbs.).
1914 ..	273 ..	9,716½	1.49 ..	436.83 ..	498 ..	24 ..

Fairy of Willow Vale.

1914 ..	273 ..	6,760½	3.89 ..	261.44 ..	298 ..	16 ..
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In the past, too little attention has been paid by dairymen to the influence the sire can exert, and any kind of bull, as long as he was able to get a calf, has been by many considered good enough. Fortunately, large numbers of these scrubbers have found their way to the slaughter-house as a result of the drought, and there is a clear field ahead for the introduction of pure-bred animals throughout the country, and within a few generations the average yield of milk and butter fat can be largely augmented by selecting bulls from lines of heavy yielding cows. A study of the tables in this report will indicate where such animals are procurable.

The primary object in view in the conduct of the Government herd testing is that farmers may know the strain of milk producers in the various breeds, and be enabled to select bulls capable of improving the

**Wilful Venture.**

OWNER—P. E. KEAM.

Record.	Days in Milk.	Weight of Milk (lbs.).	Average Test.	Butter Fat (lbs.).	Commercial Butter (lbs.).	Weight of Milk Last Day of Test (lbs.).
1913 ..	273 ..	6,381½ ..	5.95 ..	379.75 ..	433 ..	14½
1914 ..	273 ..	6,872 ..	6.27 ..	431.19 ..	491½ ..	19
1915 ..	273 ..	7,429½ ..	6.46 ..	479.85 ..	547 ..	19

**Empire IV. of Melrose.**

OWNER—W. WOODMASON.

Record.	Days in Milk.	Weight of Milk (lbs.).	Average Test.	Butter Fat (lbs.).	Commercial Butter (lbs.).	Weight of Milk Last Day of Test (lbs.).
1914 ..	273 ..	7,787½ ..	5.64 ..	439.63 ..	501½ ..	18½
1915 ..	273 ..	8,534½ ..	5.61 ..	478.13 ..	546½ ..	26

herds. Even with the average cow the use of such animals will in time show beneficial results, but with cows of good quality to commence with the result will be more quickly attained. The small dairyman is, as a rule, the one who gives only small prices for his stock, and usually he gets the worst for the money. He should, as a matter of fact, pay most for the best, for it is only the rich man who can afford to keep the unprofitable cow. If the small man would keep half, or even one-third, of the number of cows usually kept, but have good ones, his returns would be much more satisfactory. He would have less trouble with labour—more time to devote to careful management, to the growth of crops, and generally to improve his holding. He could feed more liberally, and even though he increased the cost of feeding, he would produce his butter fat at a cheaper rate per lb. Even with the prohibitive prices which have been ranging for food, it has paid to feed well,



Sweetbread XXIV. (imp.).

OWNER—C. D. LLOYD.

Record.	Days in Milk.	Weight of Milk (lbs.).	Average Test.	Butter Fat (lbs.).	Commercial Butter (lbs.).	Weight of Milk Last Day of Test (lbs.).
1914	273	8,421	5.84	492.19	561	24
1915	273	8,504½	5.87	482.26	549½	17

as was illustrated by a Northern District farmer, who found it advantageous to spend 1s. 6d. per day per head for feed for a herd of 29, including five heifers on first calf, getting such a return for his outlay as to show a profit of 1s. 1d. per head per day, while selling milk at 1s. 3d. per gallon, or 4d. per day if the sale of butter fat was carried out.

The foresight of another farmer in an irrigation area is worthy of record. His farm consists of 150 acres; he milked 35 cows, and received an offer of £2,000 for six months' grazing right. The tempting offer was refused, and to-day he is glad, for his stock are in splendid condition, milking heavily, and returning a handsome profit.

These are merely examples to show the confidence farmers have had in the capabilities of their cows. If further evidence is necessary, the tables herewith indicate that in spite of the adverse conditions, the general returns have been well maintained, and many individual animals have even surpassed their previous records. This aspect should be carefully considered by some breeders in the State, who have refrained from entering their herds for testing on the assumption that, by being situated in some of the poorer portions of the State, they would not compare favorably with those more favoured by natural pastures. The amount of natural pasture available during the period of this report has been a negligible quantity, yet some splendid results are shown.



Countess Twylish.

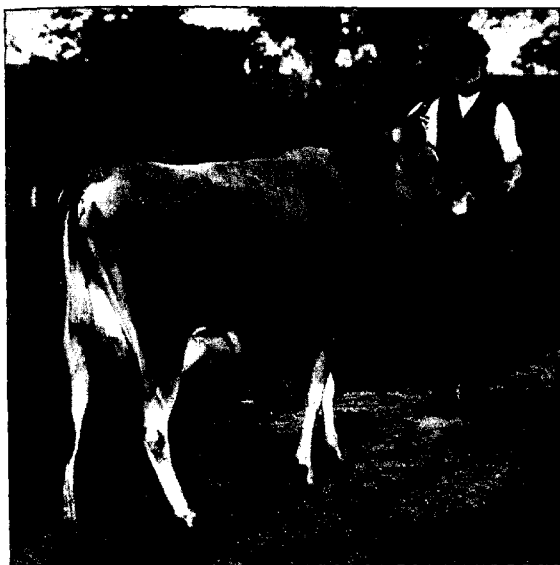
OWNER—C. D. LLOYD.

Record.	Days in Milk.	Weight of Milk (lbs.).	Average Test.	Butter Fat (lbs.).	Commercial Butter (lbs.).	Weight of Milk Last Day of Test (lbs.)
1915	273	8,505½	5.11	435.13	496	22

Disparaging comparisons are sometimes made between the conduct of the test as carried out in this State and in other countries. It is, therefore, not out of place to briefly outline the methods in vogue.

In the first place, it has been considered that any forcing methods whereby big records might be obtained are not in the best interests of the industry, as a tendency is developed to impair breeding quality. Commercially, it is recognised as a sound principle to breed a calf annually. With this object in view, our test is arranged to cover a period of nine months only. The cow then has an opportunity of obtaining a well-earned rest before coming into the herd again. In order to demonstrate which of the cows are longer milkers than nine

months, the weight of milk on the last day of test is always recorded. Breeders may therefore see which cows are still going strong. In a further effort to prevent forcing and false impressions as to the merits of herds by judging on the best animals only, all cows in the herd must be submitted to the test. In this way a breeder is prevented from gaining distinction for his herd by having only one animal of high quality and a bad tail end, an average of the whole herd correcting such impressions and showing the true commercial merit.



Audrey Lassie.

OWNER—C. GORDON LYON.

Record.	Days in Milk.	Weight of Milk (lbs.).	Average Test.	Butter Fat (lbs.).	Commercial Butter (lbs.).	Weight of Milk Last Day of Test (lbs.).
1913 ..	273 ..	4,854 ..	5.2 ..	252½ ..	287½ ..	11
1914 ..	273 ..	7,596 ..	4.74 ..	360 ..	410½ ..	17
1915 ..	273 ..	7,657 ..	5.04 ..	386½ ..	440½ ..	15

The question of standard was the next aspect to be considered when the scheme was being evolved, and based upon the figures that were then available, 175 lbs., 200 lbs., and 250 lbs. were fixed as a minimum in each class. The following averages obtained last year indicate that such standard is somewhat lower than the actual average obtained:—

AVERAGE BUTTER FAT RETURNS FOR ALL COWS TESTED.

Standard.	No. of Cows.	Average Butter Fat.
250 lbs.	165	318.90
200 ..	56	258
175 ..	104	210.97
	325	274.87

ANALYSIS OF SEASON, 1914-15.

The cow which attained pride of place in the order of merit for the year is "Muria," one of the Red Polls at the Werribee Research Farm. Her record of 12,297 lbs. of milk with an average test of 5.74, yielding 705.88 lbs. of butter fat, or, allowing a 14 per cent. overrun, 804 $\frac{3}{4}$ lbs. of butter in nine months is a splendid return, and is marred by only one factor, which is, that all efforts to get her in calf at the usual period failed, and it was not until near the end of the nine months' test that success was attained. If milk was sold her return for nine months at 9d. per gallon would be £46 2 3

If butter fat were sold her return would be—fat, at 1s. per lb. 35 5 9
 Skim milk, at 1d. per gallon 5 2 5
 £40 8 2



Molly II.

OWNER—C. GORDON LYON.

Record.	Days in Milk	Weight of Milk (lbs.)	Average Test	Butter Fat (lbs.)	Commercial Butter (lbs.)	Weight of Milk Last Day of Test (lbs.)
1913 ..	273 ..	7,440 ..	4.85 ..	361 ..	411 $\frac{1}{2}$
1914 ..	273 ..	7,429 $\frac{1}{2}$..	4.97 ..	369 $\frac{1}{2}$..	421 $\frac{1}{2}$..	17
1915 ..	273 ..	8,043 ..	5.03 ..	404 $\frac{1}{2}$..	461 $\frac{1}{2}$..	15

The cow next in order of merit was "Linda of Gowrie Park," an Ayrshire owned by Mr. W. P. Brisbane. Her return, compared with previous years, was a greater quantity of milk, viz., 13,401 lbs., but the test was slightly lower, being 4.78, while the total butter fat yield was 640.5 lbs. This cow was fourteenth in the results for 1914, when 418 $\frac{3}{4}$ lbs. of butter fat were obtained. She thus shows a very substantially increased

yield, and surpasses on this occasion the previous year's runner-up, "Ida of Gowrie Park," who, however, only drops back one place, though giving a much better record. In 1914 she was second with 10,867 lbs. milk—555 lbs. of butter fat. In 1915 she was third with 11,917 lbs. milk—605 lbs. of butter fat, a truly remarkable and consistent record—her test for both periods being 5.1 for 1914, and 5.08 for 1915.

Whilst the Ayrshires have the honour of holding seven out of the first ten positions, the Jersey breed again demonstrated its value, for, as will be seen from the order of merit, there comes a long run of this breed with very handsome returns comparing favorably with previous returns.



Silvermine IV.

OWNER—C. GORDON LYON.

Record.	Days in Milk.	Weight of Milk (lbs.).	Average Test.	Butter fat (lbs.).	Commercial butter (lbs.).	Weight of Milk Last Day of Test (lbs.).
1913 ..	273 ..	7,591½ ..	5.12 ..	388.8 ..	443½ ..	204
1914 ..	273 ..	6,944 ..	5.18 ..	339.91 ..	410½ ..	174
1915 ..	273 ..	7,364 ..	5.37 ..	395.43 ..	450½ ..	18

Mention may be made of "Empire IV. of Melrose," owned by Mr. W. Woodmason, which occupies fourteenth position with 479.1 lbs. of butter fat as against 439 lbs. last year, when she occupied a higher position, viz., seventh.

"Wilful Venture," owned by Mr. P. E. Keam, is thirteenth on the list with 479.8 lbs. of fat, as against ninth the previous year with 431 lbs.

"Sweetbread 24th," owned by Mr. C. D. Lloyd—twelfth this year with 482 lbs. fat, and fifth in 1914 with 492 lbs.

"Noreen," the phenomenal fifteen-year old cow of Mr. C. Gordon Lyon, fifteenth, and 471 lbs. of fat, as against 523 lbs. last year, when she attained third position, is another splendid record.

Amongst the cows under four years of age, and requiring the 200-lbs. standard, a splendid performance is put up by another Ayrshire of Mr. Brisbane, in "Moonlight of Gowrie Park," which gave 10,079 lbs. of milk, 499.26 lbs. of butter fat, and almost doubled her previous and first return when she was seventh amongst the heifers with 5,535 lbs. of milk and 258 lbs. of fat. Her test has been very consistent, only varying by .3 per cent. "Diamond of Gowrie Park" is second in this class, jumping from 22nd place in the previous return. The third position in this class goes to a Jersey cow in "Lady Grey V.," owned by Mr. A. W. Jones. This cow occupied sixth place in the previous



Noreen.

OWNER—C. GORDON LYON.

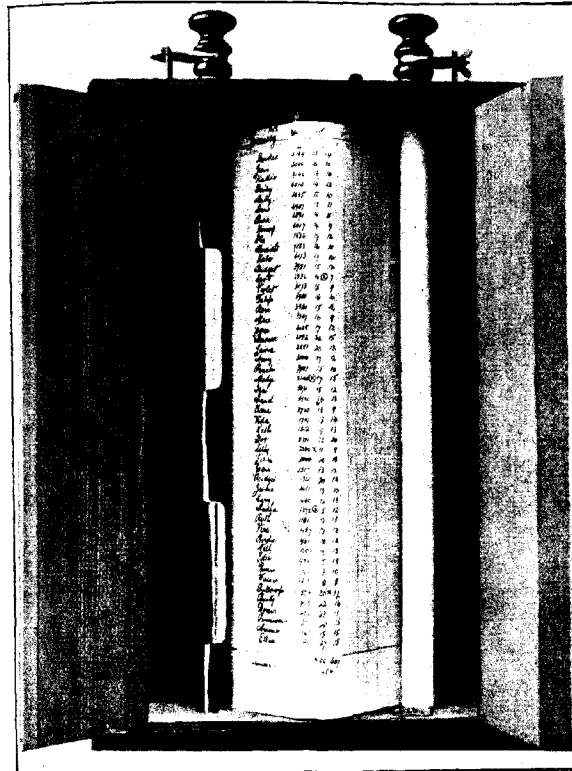
Record.	Days in Milk.	Weight of Milk (lbs.).	Average Test.	Butter Fat (lbs.).	Commercial Butter (lbs.).	Weight of Milk Last Day of Test (lbs.).
1914 ..	273 ..	11,427 ..	4.58 ..	523.6 ..	597 ..	244
1915 ..	273 ..	9,896 ..	4.77 ..	471.68 ..	537½ ..	11½

year, and her records so far mark her as a consistent and splendid butter producer. In 1914 she gave 6,437 lbs. milk; 305 lbs. fat: test, 5.62. In 1915 she gave 8,323 lbs. milk; 466 lbs. fat: test 5.61.

Amongst the heifers requiring 175 lbs. of fat to qualify for a certificate some handsome returns are recorded. Mr. Brisbane scores again in this class with "Stella of Gowrie Park," 9,398 lbs. of milk; 446 lbs. fat, and second with "Ivoline of Gowrie Park" (out of "Ida of Gowrie Park," the runner-up last year), with 8,564 lbs. of milk and 414 lbs. fat; such records would not disgrace an older cow.

A herd which calls for special mention is that of Mr. C. G. Knight, of Cobram, situated in one of the driest areas of the State, which severely felt the recent drought. The returns are commendable, especially in respect of the heifers, many of which show promise of putting up good records under more favorable circumstances.

During the period under review 21 herds have been submitted to the test—an increase of five over the previous year—and the



Record Chart Cabinet.

following table showing the averages of all herds is interesting. It should be noted that the average is based on the whole herd—not only on those cows gaining their certificates.

The highest average, 383 lbs. of fat and 8,090 lbs. of milk, or valuing fat at 1s. per lb., a return of £19 3s., without estimating the value of the skim milk, will indicate what may be attained by judicious manage-

ment. Other returns worthy of note because of the number of cows competing, which indicates the commercial basis, are those of Mr. Wm. Woodmason, with 64 cows, averaging 357 lbs. fat, or £17 17s. per cow, and the Red Polls of the Research Farm, 36 in number, averaging 314 lbs. fat, or £15 14s. per cow for butter fat. Further interesting figures may be seen by estimating their value if milk was sold, which all go to prove the need for more attention to be paid to the average herds of Victoria, which are far below these figures. With respect to the herds which are at the bottom of the list, it is only fair to mention that they were amongst those which felt the ill-effects of the bad season most, and had a particularly trying time; indeed, it was only with great difficulty that they were kept going long enough to complete their period.

AVERAGES OF HERDS.

No.	Owner.	Breed.	No. of Cows Tested.	No. of Cows Certificated.	Average Milk.	Average Butter.	Average Butter Fat.
					lbs.		lbs.
1	W. P. Brisbane, Weerite ..	Ayrshire ..	31	28	8,090.39	4.74	383.92
2	C. G. Lyon, Heidelberg ..	Jersey ..	15	15	7,511.81	4.99	360.02
3	C. D. Lloyd, Caulfield ..	" ..	10	6	6,321.75	5.71	355.96
4	P. E. Keam, Heidelberg ..	" ..	12	1	6,376.37	5.55	354.02
5	W. Woodmason, Malvern ..	" ..	64	61	6,021.06	5.61	337.74
6	A. W. Jones, Whittington ..	" ..	8	8	5,854.81	5.77	337.70
7	E. N. Wood, Caulfield ..	" ..	1	1	5,629	5.83	328.49
8	F. Curnick, Malvern ..	" ..	1	1	6,000	5.34	320.71
9	Department of Agriculture, Werribee ..	Red Polls ..	36	33	6,973	4.54	316.75
10	J. D. Read, Springhurst ..	Jersey ..	21	17	4,771.21	5.48	261.55
11	W. T. Manifold, Camperdown ..	Shorthorn ..	12	1	6,371	4.06	258.87
12	G. G. Knight, Cobram ..	Jersey ..	20	18	4,706.89	5.37	252.87
13	Miss S. L. Robinson, Malvern ..	" ..	7	3	4,711.5	5.35	251.01
14	D. Sadler, Camperdown ..	Ayrshire ..	8	8	5,637.65	4.46	251.29
15	A. Box, Hlawatha ..	Jersey ..	5	3	5,022.30	4.98	250.16
16	Mrs. B. M. Beckwith, Malvern ..	Dexter-Kerry ..	3	2	4,482	4.88	219.08
17	W. McGarvie, Pomboorneit ..	Jersey ..	4	3	4,818.31	4.33	208.83
18	Geelong Harbor Trust, Marshalltown ..	Ayrshire ..	20	8	4,798.34	4.32	202.36
19	Sadler Bros., Noorat ..	" ..	9	4	5,098.47	3.83	200.21
20	F. J. Stansmore, Pomboorneit ..	" ..	58	4	3,340.21	4.32	144.90
21	Mrs. A. Black, Noorat ..	Jersey ..	4	..	1,653.87	5.78	95.60

RETURN OF CERTIFICATED COWS FOR YEAR ENDING 30th JUNE, 1915.

MRS. B. M. BECKWITH, Malvern. (DEXTER KERRY).

Completed during the year—3. Certificated—2.

Name of Cow.	Hard Hook No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter.
					lbs.	lbs.		lbs.	lbs.	lbs.
Kilow ..	Not yet allotted	5.2.14	12.2.14	273	16½	5,658½	4.62	261.64	250	288½
Colleen ..	"	3.7.14	10.7.14	266	4½	4,463½	4.78	213.51	200	243½



Lady Gray 5th.

OWNER—A. W. JONES.

Record.	Days in Milk.	Weight of Milk (lbs.).	Average Test.	Butter Fat (lbs.).	Commercial Butter (lbs.).	Weight of Milk Last Day of Test (lbs.)
1914 ..	2 3 ..	5,437½ ..	5.62 ..	305.87 ..	348½ ..	12
1915 ..	2,3 ..	8,323½ ..	5.61 ..	466.93 ..	532½ ..	20



Tullip of Springhurst.

OWNER—J. D. READ.

Record.	Days in Milk.	Weight of Milk (lbs.).	Average Test.	Butter Fat (lbs.).	Commercial Butter (lbs.).	Weight of Milk Last Day of Test (lbs.).
1913 ..	273 ..	4,550½ ..	5.63 ..	256.17 ..	292 ..	64
1914 ..	273 ..	4,774½ ..	5.98 ..	285.70 ..	325½ ..	5½
1915 ..	273 ..	6,090 ..	5.93 ..	361.57 ..	412½ ..	8

MRS. A. BLACK, Noorat. (JERSEY.)

Completed during the year—4. Certificated—0.

H. BOX, Hiawatha. (JERSEY.)

Completed during the year—5. Certificated—3.

Name of Cow.	Heed Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter.
Roseneath Daphne ..	3774	18.7.14	25.7.14	273	lbs. 10	lbs. 5,457½	5.16	lbs. 281.53	200	lbs. 321
Roseneath's Favourite IV.	Not yet allotted	5.8.14	12.8.14	273	11½	5,145½	4.30	221.15	175	252
Larkspur's Clarithelle VI.	3772	1.9.14	8.9.14	273	13½	7,088½	4.94	350.14	250	399½

W. P. BRISBANE, Weerite. (AYRSHIRE.)

Completed during the year—31. Certificated—28.

Name of Cow.	Heed Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter.
Lady Jean of Gowrie Park ..	2425	26.9.13	3.10.13	273	21	5,418½	4.75	257.50	175	293½
Trilby of Gowrie Park ..	2124	28.9.13	5.10.13	273	16½	5,130½	4.23	216.86	200	247½
Laura IV. of Gowrie Park ..	1709	5.10.13	12.10.13	273	10½	5,291½	4.67	434.13	250	495
Songstress of Gowrie Park ..	2122	8.10.13	15.10.13	273	18½	5,988½	4.33	259.26	250	295½
Tulip of Gowrie Park ..	2435	10.10.13	17.10.13	273	27½	6,388½	4.47	294.26	175	335½
Apple Pie of Gowrie Park ..	2409	1.11.13	8.11.13	273	13½	4,832½	3.98	192.16	175	219
Ida of Gowrie Park ..	2423	14.3.11	21.3.11	273	26½	11,917½	5.08	605.05	250	689½
Blossom of Gowrie Park ..	2411	28.3.11	4.4.11	273	27½	10,001½	4.94	523.77	250	597
Patch of Gowrie Park ..	2430	28.3.11	4.4.11	273	20½	7,157½	4.03	382.66	250	456½
Chaffinch of Gowrie Park ..	2413	3.4.11	10.4.11	273	16½	7,382	5.00	378.83	250	431½
Heather Duchess of Gowrie Park ..	1449	3.4.11	10.4.11	273	17½	7,557	4.94	373.47	250	425½
Dolly Varden of Gowrie Park ..	2418	8.4.11	15.4.11	273	20	9,027	4.41	398.28	250	454
Linnett of Gowrie Park ..	2794	9.4.11	16.4.11	273	19½	7,783	4.61	359.09	175	409½
Lurie of Glen Elgin ..	2199	9.4.11	16.4.11	273	15	8,334	5.04	420.19	250	459
Martha of Gowrie Park ..	2795	15.4.11	22.4.11	273	13½	6,529	4.88	318.39	175	361
Pretty of Gowrie Park ..	2797	16.4.11	23.4.11	273	32½	11,196½	4.42	494.66	250	564
Queen Bee of Gowrie Park ..	2798	16.4.11	23.4.11	273	13½	6,800	4.85	330.04	175	376½
Honey of Gowrie Park ..	2422	17.4.11	24.4.11	273	23	12,653½	4.41	558.39	250	636½
Ivoline of Gowrie Park ..	2793	19.4.11	26.4.11	273	19½	8,564	4.84	414.78	175	472½
Ruby Queen of Gowrie Park ..	2800	20.4.11	27.4.11	273	17½	7,174½	4.37	313.64	175	352½
Trixie of Gowrie Park ..	2434	20.4.11	27.4.11	273	24½	10,725	4.75	509.32	250	589½
Stella of Gowrie Park ..	2801	5.5.11	12.5.11	273	22	9,398	4.75	446.42	175	509
Diamond of Gowrie Park ..	2791	3.7.11	10.7.11	273	23	9,627½	5.06	487.44	200	555½
Princess of Gowrie Park ..	1710	20.7.11	27.7.11	273	12½	8,330½	4.67	416.78	250	475½
Moonlight of Gowrie Park ..	2796	23.7.11	30.7.11	273	20	10,079	4.95	499.26	200	509½
Daivymaid II. of Gowrie Park ..	2415	19.8.11	26.8.11	273	20½	*9,682	5.09	492.98	250	562
Linda of Gowrie Park ..	2426	20.8.11	27.8.11	273	27	*13,401	4.78	640.50	250	739½
Laura IV. of Gowrie Park ..	1709	22.9.11	29.9.11	*268	25½	*107,64½	5.28	568.71	250	641½

* Sickness (fodder poisoning) affected yield towards end of term.

† No weights for last five days, owing to an attack of mammites.

F. GURNICK, Malvern. (JERSEY.)

Completed during the year—1. Certificated—1.

Name of Cow.	Herd book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter.
Perless Pearl ..	3771	1.10.13	8.10.13	273	lbs. 15	lbs. 6,000	5.34	lbs. 320.71	lbs. 175	lbs. 365½

DEPARTMENT OF AGRICULTURE, Werribee. (RED POLLS.)

Completed during the year—36. Certificated—33.

Name of Cow.	Herd book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter.
Goldleaf ..	Not yet allotted	30.9.13	7.10.13	273	lbs. 10	lbs. 6,805	4.40	lbs. 309.50	lbs. 230	lbs. 353½
Egypt	7.10.13	14.10.13	273	17	* 6,682	4.13	275.80	250	314½
Kentucky	22.10.13	20.10.13	273	20	7,804½	3.96	309.02	250	352½
Arloah	8.12.13	15.12.13	273	10½	5,640	4.80	270.64	200	308½
Turkshoe	11.12.13	18.12.13	273	15½	3,986½	4.75	180.41	175	216
Samorna	26.2.14	8.3.14	273	14	4,407½	4.82	212.07	175	241½
Phillipina	24.5.14	31.5.14	273	84	6,628½	5.04	333.88	200	380½
Albana	25.5.14	1.6.14	248	18½	5,471	4.73	259.05	250	295½
Canoe	28.5.14	4.6.14	273	15½	5,235	5.14	299.40	200	307
Connecticut	2.6.14	9.6.14	254	4½	6,730	4.74	319.65	250	363½
Turka	3.6.14	10.6.14	273	7½	6,214	4.93	306.71	250	349½
Albana	5.6.14	12.6.14	273	14	6,816	3.95	299.04	200	306½
Albana	19.6.14	26.6.14	273	5½	5,800	4.91	285.04	250	325
Vuelta	19.6.14	26.6.14	233	4	7,401½	4.46	330.20	250	376½
Sumatra	21.6.14	28.6.14	273	9½	8,000	4.67	410.81	250	478½
Netherland	23.6.14	30.6.14	273	18	6,612½	4.21	278.23	200	317½
Pennsylvania	28.6.14	5.7.14	273	28	9,439½	4.07	384.71	250	458½
Cuba	12.7.14	19.7.14	273	22	9,526	4.17	426.32	250	496
Virginia	14.7.14	21.7.14	273	22	9,202	4.41	405.77	250	462½
Tennessee	15.7.14	22.7.14	273	17½	6,226½	4.05	252.03	175	288½
La Reina	16.7.14	23.7.14	273	13½	4,318	5.05	218.07	175	248½
Scvia	19.7.14	26.7.14	273	12½	4,701½	4.70	221.23	175	252½
Nebraska	24.7.14	31.7.14	273	8	8,465	4.63	391.64	250	446½
Maria	25.7.14	1.8.14	273	30	12,204	3.74	703.88	250	804½
Bellion	28.7.14	4.8.14	273	20	10,900½	4.23	426.71	250	496½
Pipio	29.7.14	5.8.14	273	17	6,045½	4.68	282.80	175	322½
Goldleaf	4.8.14	11.8.14	273	15½	7,754½	4.43	343.82	250	392
Europa	5.8.14	12.8.14	273	18½	7,734½	4.34	336.65	250	383½
Yvica	7.8.14	14.8.14	273	21½	8,287	4.85	402.25	250	458½
Havana	18.8.14	25.8.14	273	12	16,543	4.02	263.34	250	300½
Briseye	30.8.14	6.9.14	273	12½	7,942½	5.51	437.56	250	498½
Egypt	31.8.14	7.9.14	273	15½	9,603	3.91	375.32	250	427½
Monzola	20.9.14	27.9.14	273	15½	5,524	4.18	231.23	175	263½

* Sickness for seven days affected yield.

† Protracted lameness during term affected yield.

‡ Sold twenty-five days before expiration of term.

GEELONG HARBOR TRUST, Marshelltown. (AYRSHIRE.)

Completed during the year—20. Certificated—8.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter.
Sylvia of Glen Elgin ..	1845	5.10.13	12.10.13	273	12½	8,273½	3.81	318.00	250	262½
Daphne of Sparrovale	2873	3.11.13	10.11.13	273	7½	4,909½	5.00	1249.71	200	254½
Gipsy Maid of Sparrovale ..	2510	13.1.14	20.1.14	273	7½	4,411½	4.32	190.63	175	217½
Sweet Flower of Glen Elgin ..	1844	5.3.14	12.3.14	250	4	5,681	4.61	261.71	250	286½
Ruby of Sparrovale ..	2512	2.4.14	9.4.14	273	15½	5,488½	4.13	226.75	175	258½
Ada VII. of Glen Elgin	1802	6.4.14	13.4.14	273	15	6,651	4.52	300.54	250	342½
Ruby of Glen Elgin ..	1836	14.4.14	21.4.14	273	14½	7,393	4.13	301.44	250	343½
Gaiety of Gouxie Park	2875	1.6.14	8.6.14	273	14½	5,300	4.45	245.35	175	273½

* Sickness for seven days affected yield.

A. W. JONES, Whittington. (JERSEY.)

Completed during the year—8. Certificated—8.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter.
Pet ..	3758	16.10.13	23.10.13	*210	14½	4,171½	5.45	227.61	200	259½
Lady Marge III. ..	3757	18.10.13	25.10.13	†260	13	5,197½	6.42	333.06	200	280½
Dolly ..	3754	18.10.13	25.10.13	‡221	16½	3,650½	6.30	230.07	175	242½
Blanchette III. ..	3753	21.10.13	28.10.13	273	11½	5,373½	5.50	295.50	200	337
Lady Gray IV. ..	3755	7.2.14	14.2.14	†269	19	7,250	5.76	417.78	250	476½
Mora III. ..	3756	15.6.14	22.6.14	273	14	7,264	6.18	418.75	250	511½
Lady Gray V. ..	3756	3.8.14	10.8.14	273	20	8,323½	5.61	466.93	200	512½
Blanchette III. ..	3753	9.9.14	9.9.14	273	12½	5,607	5.01	381.24	250	329½

* Lost 54 days at commencement of test.

† Lost 4 days at commencement of test.

‡ Lost 52 days at commencement of test.

P. E. KEAM, Heidelberg. (JERSEY.)

Completed during the year—2.—Certificated—1.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter.
Wilful Venture ..	2974	31.8.14	7.9.14	273	19	7,429½	6.40	479.85	250	547

C. G. KNIGHT, Cobram. (JERSEY.)

Completed during the year—20. Certificated—18.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter.
					lbs.	lbs.		lbs.	lbs.	lbs.
Princess of Tarnpirt ...	2906	29.11.13	6.12.13	273	11½	3,674	5.07	267.98	175	328½
Gen of Tarnpirt ...	2904	17.12.13	24.12.13	269	13	3,681½	5.05	208.06	175	287½
Rumsey Lass ...	2903	25.12.13	1.1.14	273	16	4,283½	5.02	240.82	175	274½
Miss Twylish ...	2969	24.1.14	31.1.14	251	14½	3,881½	6.46	250.73	200	255½
Misttoo of Tarnpirt ...	2984	4.2.14	11.2.14	273	17½	5,888½	5.01	295.09	175	396½
Sweetheart of Tarnpirt ...	2987	30.3.14	6.4.14	273	14	4,653½	4.71	219.13	175	249½
Doreen of Tarnpirt ...	2982	16.6.14	23.6.14	273	5½	3,548½	5.55	197.14	175	224½
Amey Castles ...	1520	17.6.14	24.6.14	244	5	5,104	5.97	304.53	250	347½
Lady Progress ...	2178	10.7.14	17.7.14	273	6½	4,639	5.56	258.02	250	204½
Foxdove of Tarnpirt ...	2983	13.7.14	20.7.14	258	4	3,795½	6.75	256.20	175	292
Dolly of Tarnpirt ...	1840	14.7.14	21.7.14	273	6½	5,387	5.73	307.50	250	350½
Bo-geep ...	1004	16.7.14	23.7.14	258	4½	5,412½	4.73	256.33	175	292½
Mybie ...	2404	16.7.14	23.7.14	253	4	6,031	5.25	316.58	250	361
Princess of Tarnpirt ...	2985	27.7.14	3.8.14	243	4	3,912	5.65	221.21	175	252½
Bonnie ...	2980	8.8.11	15.8.14	273	5	4,628	5.36	248.11	175	282½
Lib of Tarnpirt ...	2221	15.8.14	22.8.14	262	5	4,568	4.38	200.33	200	228½
The Bits of Tarnpirt ...	2988	27.8.14	3.9.14	273	11½	5,415½	4.95	268.28	175	303½
Royal Rose ...	2585	21.9.14	28.9.14	273	8	5,548	5.61	311.14	250	355

* Sold 4 days before expiration of term.

† Sold 42 days before expiration of term.

‡ An attack of hoven affected yield.

§ Lost first 4 days, as weights not kept.

C. D. LLOYD, Caulfield. (JERSEY.)

Completed during the year—6. Certificated—6.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter Fat.
Queen Spark	2533	12. 11. 13	19. 11. 13	*237	lbs.	lbs.		lbs.	lbs.	lbs.
Countess Twylish	928	15. 11. 13	22. 11. 13	273	15½	4,194½	7.04	295.24	200	336½
Queen	2976	18. 3. 14	25. 3. 14	273	22	8,505½	5.11	435.13	250	496
Spark	2978	25. 4. 14	2. 5. 14	273	13½	4,952½	5.38	286.26	175	303½
Harbell	2975	28. 6. 14	4. 7. 14	273	15	5,072½	6.32	358.85	175	409
Sweet Bread	XXIV.					4,781	6.16	394.45	175	335½
(Imp.)	2979	16. 8. 14	23. 8. 14	273	17	8,504½	5.67	482.26	250	549½

* Lost 36 days, as weights not available

C. G. LYON, Heidelberg. (JERSEY.)

Completed during the year—15. Certified—15.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk in Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter.
					lbs.	lbs.		lbs.	lbs.	lbs.
Kathleen II.	1104	17.10.13	24.10.13	273	15	7.1554	4.43	317.11	250	261
Lassie II.	1136	23.11.13	6.12.13	273	25†	9.8854	4.79	450.45	250	513
Fox's Lassie of Banyule	1926	30.11.13	7.12.13	273	21	6.6724	4.05	330.78	200	377
Silvermine V.	1386	27.12.13	3.1.14	273	28‡	5.5152	5.12	282.40	250	329
Silver Pride	1387	29.12.13	5.1.14	273	18‡	6.0971	4.70	286.53	200	326‡
Silver Audrey	1378	30.12.13	6.1.14	273	15‡	6.1281	4.98	305.38	200	348
Silvermine III.	715	9.1.14	16.1.14	273	26‡	8.2661	5.16	420.31	250	486
Hawthorn of Banyule	1064	4.3.14	11.3.14	273	21	7.5881	5.16	391.55	250	446
Hawthorn II. of Banyule	3019	6.3.14	13.3.14	273	9	4.2055	6.35	225.16	175	256
Noroon	636	4.8.14	11.8.14	273	11‡	9.896	4.77	471.68	250	537
Parrakeet	3625	21.7.14	110.8.14	273	18	7.287	4.70	342.65	175	326
Molly II.	614	21.8.14	28.8.14	273	15	8.043	5.03	404.81	250	461
Kathleen III.	2110	7.9.14	14.9.14	273	15	6.918	5.55	363.81	250	435
Silvermine IV.	710	9.9.14	16.9.14	273	18	7.364	5.37	365.43	250	439
Audrey Lassie	823	22.9.14	29.9.14	273	15	7.657	5.04	386.27	250	440

* Sickness for 7 days affected yield.

† Entry deferred 22 days.

W. McGARVIE, Pomboineil. (JERSEY.)

Completed during the year—4. Certified—3.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk in Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter.
					lbs.	lbs.		lbs.	lbs.	lbs.
Daisy	3711	26.9.13	3.10.13	273	14	4.602‡	4.29	197.67	175	223
Bessie	1584	27.9.13	4.10.13	273	17‡	6.128‡	4.43	271.39	200	309
Stockings	3713	10.10.13	17.10.13	273	10	4.316‡	4.61	199.21	175	227

W. T. MANIFOLD, Camperdown. (SHORTHORN.)

Completed during the year—2. Certified—1.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk in Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter.
					lbs.	lbs.		lbs.	lbs.	lbs.
Sunflower	Not yet allotted	25.9.13	2.10.13	*268‡	12‡	8.671‡	4.09	354.98	250	404

* Lost 4½ days. Last weights not available.

J. D. READ, Springhurst. (JERSEY.)

Completed during the year—21. Certificated—17.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter.
Granite of Springhurst	2059	5.10.13	12.10.13	259	lbs. 5½	*5,612½	6.11	342.81	lbs. 250	390½
sawdrop of Springhurst	3709	8.4.14	15.4.14	273	0½	3,613½	5.25	189.68	lbs. 175	216½
Princess of Springhurst	2521	16.4.14	23.4.14	273	7½	*6,291	5.87	369.11	lbs. 250	420
Graceful Magnet of Springhurst	2058	22.4.14	29.4.14	273	16	6,506½	5.21	338.98	lbs. 250	386½
Trump of Springhurst	2730	23.5.14	30.5.14	273	8	6,099	5.93	361.57	lbs. 250	412½
Stockings of Springhurst	2663	25.5.11	1.6.14	273	7½	*6,119½	4.99	305.75	lbs. 250	348½
Euroa of Springhurst	1918	16.6.14	23.6.14	256	6	5,743	5.64	323.69	lbs. 250	369
Phlox	Not yet allotted	20.7.14	27.7.14	268	6½	4,027	5.35	215.48	lbs. 175	245½
Battercup of Springhurst	3702	3.8.14	10.8.14	257	4½	4,435	6.04	267.80	lbs. 200	305½
Foxglove of Springhurst	3704	5.8.14	12.8.14	273	5	4,453½	5.39	251.06	lbs. 200	286½
Isis of Springhurst	3706	7.8.14	14.8.14	273	4	*3,708½	5.08	221.60	lbs. 200	252½
Duke of Springhurst	1878	9.8.14	16.8.14	273	5½	5,014½	5.60	281.10	lbs. 250	320½
Hyacinth	3705	12.8.11	19.8.14	245	7	3,245	5.99	194.40	lbs. 175	221½
Cousin	3703	17.8.14	24.8.14	273	10½	5,131½	4.92	252.67	lbs. 250	288
Shamrock of Springhurst	3708	17.8.14	24.8.14	267	5½	3,807	5.37	204.30	lbs. 175	233
Lupin	Not yet allotted	16.9.14	23.9.14	273	12	4,263½	5.06	215.54	lbs. 175	245½
Slightshade	3707	17.9.14	24.9.14	273	9	5,049	4.55	229.60	lbs. 200	261½

* An attack of mastitis affected yield.

MISS S. L. ROBINSON, Malvern. (JERSEY.)

Completed during the year—7. Certificated—3.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter.
Lefina (Imp.)	1160	26.10.13	2.11.13	273	lbs. 15	8,200	5.20	426.63	lbs. 250	486
White Belle (Imp.)	1488	2.11.13	9.11.13	273	22½	9,044	5.09	480.73	lbs. 250	525½
Defenders (Amberle)	958	7.6.14	14.6.14	273	5½	5,600½	5.70	322.80	lbs. 250	365½

D. SADLER, Camperdown. (AYRSHIRE.)

Completed during the year—8. Certificated—8.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter.
Fleet of Kilmarnock	3091	1.10.13	8.10.13	273	7	*7,989½	3.8230	6.34	lbs. 200	349½
Annie of Kilmarnock	2089	21.12.13	28.12.13	268	7½	7,277½	4.4232	7.42	lbs. 250	366½
Maie of Kilmarnock	3088	16.3.14	23.3.14	273	11	*3,498½	5.3318	6.62	lbs. 175	212½
Peat of Kilmarnock	3098	2.5.14	9.5.14	273	30	4,951½	4.5922	7.51	lbs. 175	259½
Maie of Kilmarnock	3100	13.5.14	20.5.14	273	5	5,479	4.8426	5.42	lbs. 175	302½
Est of Kilmarnock	3092	16.5.14	23.5.14	273	17	6,643	4.7227	3.49	lbs. 175	311½
Brilliant of Kilmarnock	3090	17.5.14	24.5.14	273	4	5,338½	4.6821	9.75	lbs. 175	284½
Spider of Kilmarnock	3099	21.5.14	28.5.14	273	5	3,924½	4.5817	9.76	lbs. 175	205

* Sickness affected yield.

SADLER BROS., Noorat. (AYRSHIRE.)

Completed during the year—9. Certified—4.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter.
Lenore of Ecclefechan	2692	20.3.14	27.3.14	273	lbs. 12½	5,721½	4.11	lbs. 235.46	175	lbs. 267½
Gladys of Burnbrae	3080	26.3.14	2.4.14	273	4	7,473	3.91	292.31	250	258½
Ruby of Burnbrae	3085	29.4.14	6.5.14	231	4	6,169½	4.11	253.49	250	298
Lady of Ecclefechan	2308	10.8.14	17.8.14	273	5½	6,610½	4.51	267.83	250	305½

F. J. STANSMORE, Pombooneit. (AYRSHIRE.)

Completed during the year—58. Certified—4.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter.
Gladness II. of Caulfield	3164	16.10.13	23.10.13	214	7	6,065½	4.62	280.58	250	319½
Glad	3163	5.1.14	12.1.14	273	9½	4,035	4.39	177.22	175	202
Ida of Yafart	2717	5.1.14	12.1.14	273	17	5,937½	4.97	295.20	250	326½
Ebene of Inverkeith	3155	27.2.14	6.3.14	273	15	5,799½	4.18	242.51	200	276½

E. N. WOOD, Caulfield. (JERSEY.)

Completed during the year—1. Certified—1.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Weight of Butter.
Luxury II.	3726	2.8.14	*24.8.14	273	lbs. 14½	lbs. 5,620	5.83	lbs. 323.49	lbs. 300	lbs. 374½

* Entry deferred 15 days, as milk not weighed.

W. WOODMASON, Malvern. (JERSEY.)

Completed during the year—64. Certificated—61.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard of Fat Required.	Estimated Value of Butter.
Laura VII. of Melrose	3659	25.9.13	2.10.13	273	22	8,101 ¹	5.33	432.16	250	492 ¹
Clarke V. of Melrose	3684	8.9.13	6.10.13	273	17	6,109	6.92	422.84	250	482
Waverley Lass	2793	30.9.13	7.10.13	273	26	7,588 ¹	5.31	402.74	250	459
Chery VII. of Melrose	3636	2.10.13	9.10.13	273	12 ¹	4,816 ¹	5.97	287.63	175	328
Daisy V. of Melrose	3637	2.10.13	9.10.13	273	13	4,060	5.47	219.33	175	250
Jenny Lind VIII. of Melrose	3651	2.10.13	9.10.13	273	15	5,639	5.78	326.08	175	371 ¹
Perless VII. of Melrose	3672	3.10.13	10.10.13	273	12 ¹	4,683 ¹	6.13	287.37	175	327 ¹
Flower V. of Melrose	3640	7.10.13	14.10.13	273	20	7,678	5.76	442.32	250	504 ¹
Jessie VIII. of Melrose	3653	16.10.13	23.10.13	273	15 ¹	6,554 ¹	6.27	410.90	250	468 ¹
Freda VIII. of Melrose	3644	17.10.13	24.10.13	273	12	4,261 ¹	6.29	268.23	175	305 ¹
Paul II. of Melrose	3670	17.10.13	24.10.13	273	11 ¹	3,924 ¹	5.60	219.75	175	250 ¹
Lily IV. of Melrose	3661	18.10.13	25.10.13	273	13 ¹	5,026 ¹	5.83	293.20	175	334 ¹
Perless of Melrose III.	2817	20.10.13	27.10.13	140	15	6,316 ¹	5.48	346.31	200	394 ¹
Gracful Duchess X. of Melrose	3646	20.10.13	27.10.13	273	10	4,204	6.68	282.85	175	322 ¹
Quality VI. of Melrose	3674	23.10.13	30.10.13	273	22	7,158 ¹	5.83	417.45	250	476
Handsome Girl VI. of Melrose	3648	26.10.13	2.11.13	273	12	4,234	6.63	280.56	175	319 ¹
Bessie VI. of Melrose	3632	1.11.13	8.11.13	273	17	8,832 ¹	5.08	296.23	200	337 ¹
Betty VI. of Melrose	3675	4.11.13	11.11.13	273	13 ¹	6,420	5.88	377.47	200	430 ¹
Mystery XII. of Melrose	3667	12.11.13	19.11.13	273	14	4,664 ¹	5.77	268.07	200	306 ¹
Jessie IX. of Melrose	3654	22.11.13	29.11.13	273	21	6,785 ¹	5.59	379.75	250	433
Flower VI. of Melrose	3641	23.11.13	30.11.13	273	19	6,002 ¹	5.77	346.18	250	394 ¹
Banger VI. of Melrose	3651	24.11.13	1.12.13	254 ¹	20 ¹	5,743 ¹	5.80	291.00	175	332 ¹
Manuel II. of Melrose	Not yet allotted	13.12.13	20.12.13	242 ¹	19	4,930 ¹	5.53	272.83	200	311
Lassie Fowler III. of Melrose	1137	22.12.13	29.12.13	273	22	7,287 ¹	5.83	425.09	250	484 ¹
Laura VIII. of Melrose	3660	31.12.13	7.1.14	273	19 ¹	4,734 ¹	5.50	260.42	175	296 ¹
Zoe V. of Melrose	1496	8.1.14	15.1.14	273	19	5,284 ¹	6.04	366.69	250	418
Betty of Melrose V.	1344	23.1.14	30.1.14	273	21	7,200 ¹	5.77	415.51	250	473 ¹
Mystery VIII. of Melrose	3664	24.1.14	31.1.14	273	18 ¹	5,556	6.32	351.02	250	400 ¹
Laura VI. of Melrose	3658	20.2.14	27.2.14	273	20	7,667 ¹	5.68	435.78	250	496 ¹
Jenny Lind of Melrose VI.	3649	4.3.14	11.3.14	256 ¹	17 ¹	7,081 ¹	5.03	356.39	250	406 ¹
Jessie of Melrose XIV.	Not yet allotted	16.3.14	23.3.14	273	13	4,111 ¹	5.51	228.31	175	260 ¹
Lady Melrose IV.	"	16.3.14	23.3.14	273	18	5,152 ¹	5.22	269.22	175	307
Gracful Duchess of Melrose VIII.	1056	11.4.14	18.4.14	273	25 ¹	8,765	5.77	505.72	250	576 ¹
Jenny Lind VII. of Melrose	3650	15.4.14	22.4.14	273	23	7,877 ¹	5.64	444.57	250	506 ¹
Jessie of Melrose VI.	Not yet allotted	27.4.14	4.6.14	273	21 ¹	7,024 ¹	6.71	512.17	250	606 ¹
Polly	"	27.6.14	4.7.14	273	20 ¹	7,446 ¹	4.87	362.36	175	413
Empire	"	15.7.14	22.7.14	273	15	5,601 ¹	5.42	307.08	175	350
Phenace of Melrose II.	1297	18.7.14	25.7.14	273	23	7,090	4.22	321.36	250	366 ¹
Bessie of Melrose XI.	3656	20.7.14	27.7.14	273	15 ¹	7,108 ¹	5.92	420.61	250	479 ¹
Lady Elector of Melrose	1114	20.7.14	27.7.14	273	6	4,706 ¹	5.54	260.80	250	297 ¹
Pearl of Melrose	3669	22.7.14	29.7.14	273	15 ¹	7,238	4.63	337.65	250	385
Sweet Fanny of Melrose	1413	28.7.14	4.8.14	273	13	6,172 ¹	6.09	376.08	250	428 ¹
Vanilla V. of Melrose	3078	1.8.14	8.8.14	273	15 ¹	6,680	5.07	440.18	250	501 ¹
Merry Girl IV. of Melrose	3662	12.8.14	19.8.14	273	14 ¹	6,710 ¹	5.81	359.94	250	444 ¹
Lassie Fowler	Not yet allotted	13.8.14	20.8.14	273	15 ¹	5,977	5.69	340.32	175	388

* Entry deferred 3 weeks, as no weights available.

† Lost 9 days, as weights not furnished.

‡ Lost 301 days, as weights not furnished.

§ Lost first 5 days through omission to weigh.

W. Woodmason, Malvern—continued.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk	Average Test.	Butter Fat.	Standard of Fat Required.	Weight of Butter.
					lbs.	lbs.		lbs.	lbs.	lbs.
Peerless VIII. of Melrose	3673	13.8.14	29.8.14	273	164	6,610½	5.31	351.70	200	401
Pleasance	Not yet allotted	21.8.14	28.8.14	273	13½	4,850½	5.71	277.57	175	316½
Carrie V. of Melrose	3634	23.8.14	30.8.14	273	14	5,046½	6.43	363.10	250	414
Empire IV. of Melrose	3639	23.8.14	30.8.14	273	26	8,534½	5.01	479.13	250	546½
Mates	Not yet allotted	28.8.14	4.9.14	273	13½	5,276½	5.11	269.57	175	307½
Lizzie		31.8.14	7.9.14	273	8½	4,128	5.57	220.85	175	262
Blossom of Melrose III.	3633	2.9.14	9.9.14	273	19	7,256	4.55	329.87	250	376
Handsome Girl of Melrose III.	1062	5.9.14	12.9.14	273	9½	5,878	5.18	304.58	250	347½
Jessie of Melrose X.	3655	5.9.14	12.9.14	273	13½	6,769½	5.72	387.50	250	441½
Snowy III. of Melrose	3676	9.9.14	16.9.14	273	14½	6,404½	4.62	296.12	200	337½
Handsome Girl VI. of Melrose	3648	10.9.14	17.9.14	273	13	5,310	6.57	349.14	200	398
Handsome Girl of Melrose V.	3647	16.9.14	23.9.14	262	5	5,083	5.70	289.37	250	330
Peerless VI. of Melrose	3671	16.9.14	23.9.14	273	13	6,065	5.73	384.91	250	435½
Chevy VII. of Melrose	3636	17.9.14	24.9.14	273	13	5,784	5.61	324.56	200	370
Edith of Melrose	3638	22.9.14	29.9.14	273	18	8,445	4.69	395.79	250	451½
Pearl II. of Melrose	3670	23.9.14	30.9.14	273	14	5,767	5.67	327.13	200	373

ORDER OF MERIT.

Analysis of Herds Competing.

Breed.	Herds.	No. of Cows Completed Term.	No. of Cows Certificated.	Percentage Certificated.
Jersey	13	158	137	86.71
Ayrshire	5	126	52	41.27
Red Poll	1	36	33	91.66
Dexter-Kerry	1	3	2	66.66
Milking Shorthorns	1	2	1	50.00
Totals	21	325	225	69.23

COWS IN ORDER OF MERIT.

Cows over 4 years of Age.—250 lbs. Standard.

Order of Merit.	Name of Cow.	Herd Book No.	Owner.	Breed.	Milk.	Average Test.	Butter Pct.	Butter.
					lbs.	5-74	lbs.	lbs.
1	Maria ..	Not yet allotted	Department of Agriculture	Red Poll	12,297 1/2	5-74	705-88	504 1/2
2	Linda of Gowrie Park ..	2426	W. P. Brisbane ..	Ayrshire ..	13,401	4-78	640-50	730 1/2
3	Ira of Gowrie Park ..	2423	W. P. Brisbane ..	" ..	11,917 1/2	5-08	605-05	680 1/2
4	Laura IV. of Gowrie Park ..	1709	W. P. Brisbane ..	" ..	10,764 1/2	5-28	568-71	648 1/2
5	Honey of Gowrie Park ..	2425	W. P. Brisbane ..	" ..	12,654 1/2	4-41	558-39	636 1/2
6	Jessie of Melrose VI. ..	Not yet allotted	W. Woodmason ..	Jersey ..	7,924 1/2	6-71	532-17	606 1/2
7	Blossom of Gowrie Park ..	2411	W. P. Brisbane ..	Ayrshire ..	10,601 1/2	4-94	523-77	597
8	Trixie of Gowrie Park ..	2434	W. P. Brisbane ..	" ..	10,725	4-75	509-32	580 1/2
9	Graceful Duchess of Melrose VIII. ..	1056	W. Woodmason ..	Jersey ..	8,765	5-77	565-72	576 1/2
10	Pretty of Gowrie Park ..	2797	W. P. Brisbane ..	Ayrshire ..	11,106 1/2	4-42	494-66	561
11	Dairymaid II. of Gowrie Park ..	2415	W. P. Brisbane ..	" ..	9,982	5-09	492-98	562
12	Sweet Bread XXIV. (Imp.) ..	2979	C. D. Lloyd ..	Jersey ..	8,504 1/2	5-67	482-26	547 1/2
13	Wildcat Venture ..	2974	P. E. Keam ..	" ..	7,429 1/2	6-16	479-85	547
14	Naupia IV. of Melrose ..	3639	W. Woodmason ..	" ..	8,534 1/2	5-01	479-13	546 1/2
15	Norren ..	636	C. G. Lyon ..	" ..	9,896	4-77	471-08	557 1/2
16	White Belle (Imp.) ..	1488	Miss S. L. Robinson ..	" ..	9,014	5-09	460-73	523 1/2
17	Lassie II. ..	1136	C. G. Lyon ..	" ..	9,885 1/2	4-79	450-45	513 1/2
18	Mora III. ..	3650	A. W. Jones ..	" ..	7,264 1/2	6-18	448-75	511 1/2
19	Jenny Lind VII. of Melrose ..	3650	W. Woodmason ..	" ..	7,877 1/2	5-64	444-57	506 1/2
20	Flower V. of Melrose ..	3640	W. Woodmason ..	" ..	7,678	5-76	442-32	504 1/2
21	Vanilla V. of Melrose ..	3678	W. Woodmason ..	" ..	8,680	5-07	440-18	501 1/2
22	Elisavete ..	Not yet allotted	Department of Agriculture	Red Poll	7,942 1/2	5-51	437-56	493 1/2
23	Laura VI. of Melrose ..	3658	W. Woodmason ..	Jersey ..	7,067 1/2	5-68	435-78	496 1/2
24	Countess Twelfth ..	928	C. D. Lloyd ..	" ..	8,365 1/2	5-11	435-13	496
25	Laura IV. of Gowrie Park ..	1709	W. P. Brisbane ..	Ayrshire ..	9,201 1/2	4-67	434-13	495
26	Laura VII. of Melrose ..	3659	W. Woodmason ..	Jersey ..	8,101 1/2	5-33	425-16	492 1/2
27	Bullion ..	Not yet allotted	Department of Agriculture	Red Poll	10,090 1/2	4-23	426-71	486 1/2
28	Lotina (Imp.) ..	1100	Miss S. L. Robinson ..	Jersey ..	8,290	5-20	426-63	486 1/2
29	Olga ..	Not yet allotted	Department of Agriculture	Red Poll	9,526	4-47	426-33	486
30	Silvermine III. ..	715	C. G. Lyon ..	Jersey ..	8,266 1/2	5-16	426-81	486
31	Lassie Fowler III. of Melrose ..	1137	W. Woodmason ..	" ..	7,287 1/2	5-83	425-00	484 1/2
32	Carrie V. of Melrose ..	3634	W. Woodmason ..	" ..	6,109	6-92	422-84	482
33	Jessie of Melrose XI. ..	3656	W. Woodmason ..	" ..	7,108 1/2	5-92	420-61	479 1/2
34	Lacie of Glen Elgin ..	2109	W. P. Brisbane ..	Ayrshire ..	8,334	5-04	420-19	479
35	Sumatra ..	Not yet allotted	Department of Agriculture	Red Poll	8,990	4-67	419-81	478 1/2
36	Lady Grey IV. ..	3755	A. W. Jones ..	Jersey ..	7,250 1/2	5-76	417-78	476 1/2
37	Quality VI. of Melrose ..	3674	W. Woodmason ..	" ..	7,158 1/2	5-83	417-45	476
38	Princess of Gowrie Park ..	1710	W. P. Brisbane ..	Ayrshire ..	8,930 1/2	4-67	416-75	475 1/2
39	Rarity of Melrose V. ..	1344	W. Woodmason ..	Jersey ..	7,200 1/2	5-77	415-51	473 1/2
40	Jessie VIII. of Melrose ..	3653	W. Woodmason ..	" ..	6,554 1/2	6-27	410-90	468 1/2
41	Virginia ..	Not yet allotted	Department of Agriculture	Red Poll	9,202	4-41	405-77	462 1/2
42	Molly II. ..	814	C. G. Lyon ..	Jersey ..	8,043	5-03	404-81	461 1/2
43	Waverley Lass ..	2793	W. Woodmason ..	" ..	7,588 1/2	5-31	402-74	459
44	Perla ..	Not yet allotted	Department of Agriculture	Red Poll	8,287	4-85	402-25	458 1/2
45	Dolly Varden of Gowrie Park ..	2418	W. P. Brisbane ..	Ayrshire ..	9,027	4-41	398-28	454
46	Edith of Melrose ..	3638	W. Woodmason ..	Jersey ..	8,445	4-69	395-79	451 1/2
47	Silvermine IV. ..	716	C. G. Lyon ..	" ..	7,361	5-37	395-43	450 1/2
48	Mexicana ..	Not yet allotted	Department of Agriculture	Red Poll	8,465	4-63	391-64	446 1/2
49	Blawhorn of Banyule ..	1064	C. G. Lyon ..	Jersey ..	7,585 1/2	5-16	391-55	446 1/2
50	Merry Girl IV. of Melrose ..	3662	W. Woodmason ..	" ..	6,710 1/2	5-81	389-94	444 1/2
51	Jessie of Melrose X. ..	3655	W. Woodmason ..	" ..	6,769 1/2	5-72	387-50	441 1/2
52	Andruy Lassie ..	825	C. G. Lyon ..	" ..	7,657	5-01	386-27	440 1/2
53	Pennsylvania ..	Not yet allotted	Department of Agriculture	Red Poll	9,439 1/2	4-07	384-71	438 1/2
54	Kathleen III. ..	2140	C. G. Lyon ..	Jersey ..	6,918	6-35	383-81	437 1/2
55	Patch of Gowrie Park ..	2430	W. P. Brisbane ..	Ayrshire ..	7,757 1/2	4-93	382-66	436 1/2
56	Perless VI. of Melrose ..	3671	W. Woodmason ..	Jersey ..	6,865	5-73	381-91	435 1/2
57	Jessie IX. of Melrose ..	3654	W. Woodmason ..	" ..	6,785 1/2	5-59	379-75	433 1/2
58	Champion of Gowrie Park ..	2413	W. P. Brisbane ..	Ayrshire ..	7,582 1/2	5-00	378-82	431 1/2
59	Sweet Pansy of Melrose ..	1413	W. Woodmason ..	Jersey ..	6,172 1/2	6-09	376-08	428 1/2
60	Egypta ..	Not yet allotted	Department of Agriculture	Red Poll	9,603	3-91	375-32	427

COWS OVER 4 YEARS OF AGE—250 LBS. STANDARD—continued.

Order of Rank.	Name of Cow.	Hard Book No.	Owner.	Breed.	Milk.	Average Test.	Butter Fat.	Butter.
					lbs.	lbs.	lbs.	lbs.
61	Heather Duchess of Gowrie Park	1449	W. P. Brisbane	Ayrshire	7,557	4.94	373.47	425
62	Princess of Springhurst	2521	J. D. Read	Jersey	6,291	5.87	309.11	420
63	Zoe V. of Melrose	1496	W. Woodmason	"	5,284	6.94	366.60	418
64	Currie V. of Melrose	3634	W. Woodmason	"	5,640	6.43	365.10	414
65	Tulip of Springhurst	2730	J. D. Read	"	6,099	5.93	361.57	412
66	Jenny Lind VI. of Melrose	3649	W. Woodmason	"	7,081	5.03	356.39	408
67	Sunflower	Not yet allotted	W. T. Manifold	Shorthorn	8,671	4.09	354.98	404
68	Mystery VIII. of Melrose	3664	W. Woodmason	Jersey	5,568	6.32	351.02	400
69	Larkspur's Claribelle VI.	3772	A. Box	"	7,083	4.94	350.14	399
70	Peerless of Melrose III.	2517	W. Woodmason	"	6,313	5.43	345.80	394
71	Flower VI. of Melrose	3641	W. Woodmason	"	6,002	5.77	346.18	394
72	Goldleaf	Not yet allotted	Department of Agriculture	Red Poll	7,754	4.43	343.82	392
73	Grannie of Springhurst	2059	J. D. Read	Jersey	5,612	6.11	342.81	390
74	Graceful Magnet of Springhurst	2058	"	"	6,506	5.21	338.98	386
75	Pearl of Melrose	3669	W. Woodmason	"	7,288	4.63	337.63	385
76	Europa	Not yet allotted	Department of Agriculture	Red Poll	7,753	4.34	336.65	383
77	Vuelta	"	Department of Agriculture	Red Poll	7,401	4.46	330.20	376
78	Blossom of Melrose III.	3633	W. Woodmason	Jersey	7,256	4.55	329.87	375
79	Euroa of Springhurst	1918	J. D. Read	"	5,743	5.64	323.69	369
80	Defender's Claribelle	958	Miss S. L. Robinson	"	5,660	5.70	322.80	368
81	Annie of Kilmarnock	3069	D. Sadler	Ayrshire	7,273	4.42	321.42	366
82	Pleasant of Melrose IV.	1987	W. Woodmason	Jersey	7,990	4.92	321.34	366
83	Connecticut	Not yet allotted	Department of Agriculture	Red Poll	6,730	4.74	319.05	363
84	Sylvia of Glen Elgin	1845	Geelong Harbour Trust	Ayrshire	8,273	3.84	318.00	362
85	Kathleen II.	1164	C. G. Lyon	Jersey	7,153	4.43	317.11	361
86	Myrtle	2404	C. G. Knight	"	6,031	5.23	316.38	361
87	Royal Rose	2585	C. G. Knight	"	5,548	5.61	311.34	356
88	Kentucky	Not yet allotted	Department of Agriculture	Red Poll	7,804	3.96	309.02	352
89	Dolly of Tarapiti	1840	C. G. Knight	Jersey	5,367	5.73	307.50	354
90	Turka	Not yet allotted	Department of Agriculture	Red Poll	6,214	4.93	306.71	349
91	Thirt of Kilmarnock	3091	D. Sadler	Ayrshire	7,989	3.82	306.34	349
92	Stockings of Springhurst	2663	J. D. Read	Jersey	6,119	4.99	305.75	348
93	Handsome Girl of Melrose III.	1062	W. Woodmason	"	5,878	5.13	304.58	347
94	Amy Castles	1520	C. G. Knight	"	5,104	5.97	304.53	347
95	Ruby of Glen Elgin	1836	Geelong Harbour Trust	Ayrshire	7,303	4.13	301.44	343
96	Ada VII. of Glen Elgin	1802	Geelong Harbour Trust	"	6,651	4.52	300.54	342
97	Ida of Yalart	2717	F. J. Stansmore	"	5,937	4.07	295.20	339
98	Gladys of Burnbrae	3080	Sadler Bros.	"	7,473	3.91	292.31	339
99	Handsome Girl V. of Melrose	3647	W. Woodmason	Jersey	5,983	5.70	289.37	330
100	Asiana	Not yet allotted	Department of Agriculture	Red Poll	5,800	4.91	285.04	325
101	Silvermine V.	1386	C. G. Lyon	Jersey	5,515	5.12	282.40	322
102	Blanchette III.	3753	A. W. Jones	"	5,607	5.01	281.24	320
103	Dulcie of Springhurst	1878	J. D. Read	"	5,014	5.60	281.10	320
104	Gladness II. of Caulfield	3184	F. G. Stansmore	Ayrshire	6,063	4.62	280.58	319
105	Egypta	Not yet allotted	Department of Agriculture	Red Poll	6,682	4.13	275.80	314
106	Lady of Ecclefechan	2308	Sadler Bros.	Ayrshire	6,610	4.51	267.83	306
107	Havana	Not yet allotted	Department of Agriculture	Red Poll	6,343	4.02	263.34	306
108	Sweet Flower of Glen Elgin	1844	Geelong Harbour Trust	Ayrshire	5,681	4.61	261.71	298
109	Killow	Not yet allotted	Mrs. B. M. Deekwith	Dexter Kerry	5,658	4.62	261.64	298
110	Lady Elector of Melrose	1114	W. Woodmason	Jersey	4,708	5.54	260.60	297
111	Songstress of Gowrie Park	2122	W. P. Brisbane	Ayrshire	5,985	4.33	259.25	293
112	Atlanta	Not yet allotted	Department of Agriculture	Red Poll	5,471	4.73	259.05	293
113	Lady Progress	2178	C. G. Knight	Jersey	4,639	5.56	258.02	294
114	Ruby of Burnbrae	3085	Sadler Bros.	Ayrshire	6,169	4.11	253.42	289
115	Cowslip	3703	J. D. Read	Jersey	5,131	4.92	252.67	288

Cows under 4 Years of Age—200 lbs. Standard.

Order of Merit.	Name of Cow.	Head Book No.	Owner.	Breed.	Milk.	Average Test.	Butter Fat.	Butter.
					lbs.	lbs.	lbs.	lbs.
1	Moonlight of Gowrie Park	2786	W. P. Brisbane	Ayrshire	10,079	4.95	499.26	5694
2	Diamond of Gowrie Park	2791	W. P. Brisbane	"	9,627	5.06	487.44	5554
3	Lady Gray V.	3756	A. W. Jones	Jersey	8,323	5.61	466.93	5324
4	Railly VI. of Melrose	3675	W. Woodmason	"	6,420	5.88	377.47	4304
5	Peerless VIII. of Melrose	3673	W. Woodmason	"	6,619	5.31	351.70	401
6	Handsome Girl VI. of Melrose	3648	W. Woodmason	"	5,310	6.57	349.14	398
7	Phillipina	Not yet allotted	Department of Agriculture	Red Poll	6,624	5.04	335.88	3804
8	Lady Marge III.	3757	A. W. Jones	Jersey	5,197	6.42	333.66	3804
9	Fox's Lassie of Banyule	1026	C. G. Lyon	"	6,673	4.95	330.78	377
10	Luxury II.	3726	E. N. Wood	"	5,629	5.83	328.49	3744
11	Pearl II. of Melrose	3670	W. Woodmason	"	5,767	5.67	327.13	373
12	Chevy VII. of Melrose	3636	W. Woodmason	"	5,784	5.61	324.56	370
13	Goldleaf	Not yet allotted	Department of Agriculture	Red Poll	6,695	4.49	309.50	3524
14	Silver Audrey	1378	C. G. Lyon	Jersey	6,124	4.98	305.38	348
15	Bessie VI. of Melrose	3632	W. Woodmason	"	5,832	5.08	296.23	3374
16	Snowy III. of Melrose	3676	W. Woodmason	"	6,404	4.62	296.12	3374
17	Blanchette III.	3753	A. W. Jones	"	5,373	5.50	295.59	337
18	Queen Spark	2533	C. D. Lloyd	"	4,104	7.01	295.24	3364
19	Silver Pride	1387	C. G. Lyon	"	6,997	4.70	286.53	3264
20	Roseneath Daphne	3774	A. Box	"	5,457	5.16	281.53	321
21	Netheriana	Not yet allotted	Department of Agriculture	Red Poll	6,612	4.21	278.23	3174
22	Mermaid II. of Melrose	3644	W. Woodmason	Jersey	4,990	5.53	272.83	311
23	Bessie	1384	W. McGarvie	"	6,123	4.43	271.39	3094
24	Ardath	Not yet allotted	Department of Agriculture	Red Poll	5,640	4.80	270.64	3084
25	Camro	"	Department of Agriculture	"	5,235	5.14	269.40	307
26	Alpina	"	Department of Agriculture	"	6,816	3.95	266.04	3064
27	Mystery XII. of Melrose	3667	W. Woodmason	Jersey	4,644	5.77	268.97	3064
28	Buttercup of Springhurst	3702	J. D. Read	"	4,435	6.04	267.80	3054
29	Foxglove of Springhurst	3704	J. D. Read	"	4,634	5.39	251.06	2864
30	Miss Tynlish	2369	C. G. Knight	"	3,881	6.46	250.73	2854
31	Daphne of Sparrowale	2873	Geelong Harbour Trust	Ayrshire	4,909	5.09	249.71	2844
32	Esme of Inverkeil	3155	F. J. Stansmore	"	5,794	4.18	242.51	2764
33	Nightsnade	3707	J. D. Read	Jersey	5,049	4.55	239.60	2614
34	Pet	3758	A. W. Jones	"	4,171	5.45	237.61	2594
35	Iris of Springhurst	3706	J. D. Read	"	3,708	5.98	231.69	2524
36	Tribby of Gowrie Park	2124	W. P. Brisbane	Ayrshire	5,130	4.23	216.86	2474
37	Colleen	Not yet allotted	Mrs. B. M. Beckwith	Dexter	4,463	4.78	213.51	2434
38	Lily of Tarnpitt	2221	C. G. Knight	Jersey	4,568	4.38	200.33	2284

Heifers—175 lbs. Standard.

Order of Merit.	Name of Cow.	Head Book No.	Owner.	Breed.	Milk.	Average Test.	Butter Fat.	Butter.
					lbs.	lbs.	lbs.	lbs.
1	Stella of Gowrie Park	2801	W. P. Brisbane	Ayrshire	9,938	4.75	446.42	509
2	Ivoline of Gowrie Park	2793	W. P. Brisbane	"	8,564	4.84	414.78	4724
3	Polly	Not yet allotted	W. Woodmason	Jersey	7,410	4.87	362.36	413
4	Unsett of Gowrie Park	2794	W. P. Brisbane	Ayrshire	7,783	4.61	359.09	4094
5	Sparkle	2978	C. D. Lloyd	Jersey	5,672	6.32	358.85	409
6	Parrakeet	3625	C. G. Lyon	"	7,287	4.70	342.65	3904
7	Lassie Fowler	Not yet allotted	W. Woodmason	"	5,977	5.69	340.32	388
8	Queen Bee of Gowrie Park	2798	W. P. Brisbane	Ayrshire	6,800	4.85	330.04	3764
9	Janey Lind VIII.	3651	W. Woodmason	Jersey	5,639	5.78	326.08	3714
10	Peerless Pearl	3771	F. Curnick	"	6,900	5.34	320.71	3654
11	Martha of Gowrie Park	2795	W. P. Brisbane	Ayrshire	6,529	4.83	318.39	3634
12	Ruby Queen of Gowrie Park	2800	W. P. Brisbane	"	7,174	4.37	313.64	3574
13	Empire	Not yet allotted	W. Woodmason	Jersey	5,661	5.42	307.08	350
14	Mistletoe of Tarnpitt	2984	C. G. Knight	"	5,888	5.01	295.09	3364

HEIFERS—175 LBS. STANDARD—continued.

Order of Merit.	Name of Cow.	Heel Book No.	Owner.	Breed.	Milk.	Average Test.	Butter Fat.	Butter.
					lbs.	lbs.	lbs.	lbs.
15	Blue Bell of Pine Hill ..	2975	C. D. Lloyd ..	Jersey ..	4,781	6-16	294-43	335½
16	Tulip of Gowrie Park ..	2435	W. P. Brisbane ..	Ayrshire ..	6,588½	4-47	294-26	335½
17	Lily IV. of Melrose ..	3661	W. Woodmason ..	Jersey ..	5,026½	5-83	293-20	334½
18	Banker VI. of Melrose ..	3631	W. Woodmason ..	" ..	5,743½	5-08	291-00	328½
19	Princess of Tarnparr ..	2986	C. G. Knight ..	" ..	5,674	5-07	287-98	328½
20	Chevy VII. of Melrose ..	3636	W. Woodmason ..	" ..	4,816½	5-07	287-63	328½
21	Peerless VII. of Melrose ..	3672	W. Woodmason ..	" ..	4,684½	6-13	287-75	327½
22	Piplo ..	Not yet allotted	Department of Agriculture	Red Poll ..	6,043½	4-68	282-86	322½
23	Graceful Duchess X. of Melrose ..	3646	W. Woodmason ..	Jersey ..	4,230½	6-68	282-85	322½
24	Handsome Girl VI. of Melrose ..	3648	W. Woodmason ..	" ..	4,234	6-63	280-56	319½
25	Pleasance ..	Not yet allotted	W. Woodmason ..	" ..	4,859½	5-71	277-57	316½
26	Get of Kilmarnock ..	3092	D. Sadler ..	Ayrshire ..	6,643	4-12	279-49	311½
27	Mates ..	Not yet allotted	W. Woodmason ..	Jersey ..	5,276½	5-11	269-57	307½
28	Lady Melrose IV. ..	Not yet allotted	W. Woodmason ..	" ..	5,152½	5-22	269-22	307½
29	Tit Bits of Tarnparr ..	2988	C. G. Knight ..	" ..	5,415½	4-95	268-26	306½
30	Fuchsia VIII. of Melrose ..	3644	W. Woodmason ..	" ..	4,261½	6-29	268-23	305½
31	Doreen ..	2976	C. D. Lloyd ..	" ..	4,952½	5-38	266-26	303½
32	Sunflower of Kilmarnock ..	3100	D. Sadler ..	Ayrshire ..	5,179	4-84	265-42	302½
33	Laura VIII. of Melrose ..	3660	W. Woodmason ..	Jersey ..	4,734½	5-50	260-42	296½
34	Lady Jean of Gowrie Park ..	2425	W. P. Brisbane ..	Ayrshire ..	5,418½	4-73	257-50	293½
35	Bo-peep ..	1604	C. G. Knight ..	Jersey ..	5,412½	4-73	256-33	292½
36	Foxglove of Tarnparr ..	2983	C. G. Knight ..	Red Poll ..	3,795½	6-75	256-20	292½
37	Tennessee ..	Not yet allotted	Department of Agriculture	Red Poll ..	6,226½	4-06	252-93	288½
38	Brilliant of Kilmarnock ..	3090	D. Sadler ..	Ayrshire ..	5,338½	4-68	249-75	284½
39	Bonnie ..	2980	C. G. Knight ..	Jersey ..	4,628	5-36	248-11	282½
40	Gaiety of Gowrie Park ..	2875	Geelong Harbour Trust	Ayrshire ..	5,500	4-45	245-35	279½
41	Romany Lass ..	2563	C. G. Knight ..	Jersey ..	4,283½	5-62	240-82	274½
42	Lenore of Ecclefechan ..	2692	Sadler Bros. ..	Ayrshire ..	5,721½	4-11	235-46	267½
43	Mongolia ..	Not yet allotted	Department of Agriculture	Red Poll ..	5,524	4-18	231-23	263½
44	Dolly ..	3754	A. W. Jones ..	Jersey ..	3,650½	6-30	230-07	262½
45	Lizzie ..	Not yet allotted	W. Woodmason ..	" ..	4,128	5-57	229-85	262½
46	Jessie of Melrose XIV. ..	Not yet allotted	W. Woodmason ..	" ..	4,144½	5-51	228-34	260½
47	Pearl of Kilmarnock ..	3098	D. Sadler ..	Ayrshire ..	4,951½	4-59	227-51	259½
48	Ruby of Sparrovale ..	2512	Geelong Harbour Trust	" ..	5,488½	4-13	226-75	258½
49	Hawthorn II. of Banyule ..	3619	C. G. Lyon ..	Jersey ..	4,205½	5-35	225-16	256½
50	Sylvia ..	Not yet allotted	Department of Agriculture	Red Poll ..	4,701½	4-70	221-23	252½
51	Primrose of Tarnparr ..	2985	C. G. Knight ..	Jersey ..	3,912	5-65	221-21	252½
52	Roseneath's Favourite IV. ..	Not yet allotted	A. Box ..	" ..	5,145½	4-30	221-15	252½
53	Pearl II. of Melrose ..	3670	W. Woodmason ..	" ..	3,924½	5-60	219-75	250½
54	Daisy V. of Melrose ..	3637	W. Woodmason ..	" ..	4,060	5-47	219-33	250½
55	Sweetheart of Tarnparr ..	2987	C. G. Knight ..	" ..	4,653½	4-71	219-13	249½
56	La Reina ..	Not yet allotted	Department of Agriculture	Red Poll ..	4,318	5-05	218-07	248½
57	Lupin ..	" ..	J. D. Read ..	Jersey ..	4,362½	5-06	215-54	243½
58	Phlox ..	" ..	J. D. Read ..	" ..	4,027	5-35	215-48	243½
59	Samorna ..	" ..	Department of Agriculture	Red Poll ..	4,397½	4-82	212-07	241½
60	Gem of Tarnparr ..	2004	C. G. Knight ..	Jersey ..	3,681½	5-65	208-08	237½
61	Shamrock of Springhurst ..	3708	J. D. Read ..	" ..	3,807	5-37	204-30	233½
62	Stockings ..	3713	W. McGarvie ..	" ..	4,316½	4-61	199-21	227½
63	Daisy ..	3711	W. McGarvie ..	" ..	4,608½	4-29	197-67	223½
64	Doreen of Tarnparr ..	2982	C. G. Knight ..	" ..	3,548½	5-55	197-14	224½
65	Hyacinth ..	3705	J. D. Read ..	" ..	3,245	5-99	194-40	219½
66	Apple Pie of Gowrie Park ..	2409	W. P. Brisbane ..	" ..	4,832½	3-98	192-16	219½
67	Gipsy Maid of Sparrovale ..	2510	Geelong Harbour Trust	Ayrshire ..	4,411½	4-82	190-63	217½
68	Snowdrop of Springhurst ..	3709	J. D. Read ..	Jersey ..	3,613½	5-25	189-68	216½
69	Tuckahoe ..	Not yet allotted	Department of Agriculture	Red Poll ..	3,986½	4-75	189-41	216½
70	Almie of Kilmarnock ..	3088	D. Sadler ..	Ayrshire ..	3,498½	5-33	186-62	212½
71	Spider of Kilmarnock ..	3099	D. Sadler ..	" ..	3,924½	4-58	179-76	205½
72	Glad ..	3163	F. J. Stansmore ..	" ..	4,053	4-39	177-22	202½

REGULATIONS CONCERNING HERD TESTING FOR THE GOVERNMENT
CERTIFICATION OF STANDARD COWS.

ENTRANCE.

1. The owner of any herd of pure-bred dairy cattle may submit his herd for certification.
2. Only those cows registered in a recognised herd book or pure stock register will be accepted, and all such cows in the herd must be tested, with such exceptions as are set out in clauses 14, 15, and 16.
3. An annual fee of £1 per herd and 5s. per cow tested shall be paid to the Department of Agriculture on demand.
4. Any cow entered for certification and any calf the progeny of such cow may be branded in such manner as to insure identification, and all standard cows will be marked on the inside of an ear with the Government tattoo mark and an identification number.

LACTATION PERIOD.

5. Testing and recording shall occupy a period of nine calendar months, commencing one week from date of calving, excepting under such circumstances as set forth in clause 18. This period shall be recognised as the official lactation period.

RECORDING.

6. The milk from each cow entered shall be weighed separately immediately after each milking by means of tested and approved scales, and the weight recorded on a printed chart supplied for the purpose, which shall remain the property of the Department. Such scales and chart shall be available for inspection by a Government Dairy Supervisor when required.*

SUPERVISION.

7. A Government Dairy Supervisor, under the direction of the Chief Veterinary Officer, will make periodical visits for the purpose of checking records and taking samples of milk for testing. There shall be not less than nine visits during the official lactation period, and not more than thirty days shall elapse between any two visits. Additional visits may be made at any time by the Supervisor for the purpose of taking supplementary records and samples for testing as often as may be deemed advisable.

8. Every facility shall be afforded Government Officers in carrying out their duties under these Regulations, and accommodation must be provided over night when required.

9. Particulars as to date of calving, service, drying-off, hours of milking, manner of feeding, must be supplied for record purposes on request of the Dairy Supervisor. If deemed necessary in any case, the owner may be called upon to furnish a statutory declaration as to the correctness of such or any particulars.

TESTING.

10. In collecting samples for testing, the morning and evening milk will be taken; the tests will be made by the Chemist for Agriculture or his Deputy from a composite sample containing quantities of the morning and evening milk proportionate to the respective yields, and the results, unless shown to be abnormal, shall be considered as the average for the period intervening since the next previous normal test. If apparently abnormal, the results may be discarded, and further samples taken and tests made.

STANDARD COWS.

11. Standard cows under these Regulations shall be those which, during the official lactation period, yield—

- (a) in the case of cows commencing their first lactation period and being then under 3 years of age, 175 lbs. of butter fat;
- (b) in the case of cows commencing their first lactation period and being then over 3 years of age, 200 lbs. of butter fat;
- (c) in the case of cows commencing their second lactation period and being then under four years of age, 200 lbs. of butter fat;
- (d) in the case of cows commencing their third or any subsequent lactation period or being over four years of age, 250 lbs. of butter fat.

* During the progress of "drying-off" no weight of milk under 4 lbs. per day shall be credited to any cow.

CERTIFICATION.

12. A Government Certificate shall be issued in respect of all standard cows. Such certificate shall show the breed, the age at entry, brands, the official lactation period recorded, and date of completion, the weight of milk given, the amount of butter fat and commercial butter (estimated on a 14 per cent. overrun), and the weight of milk given on the last day of the official lactation period.

13. The Certificate issued in respect of any standard cow shall, if she attain the standard during any subsequent official lactation period, be returned to the Department, when a fresh certificate will be issued, which shall show her record for each and every lactation period in which she was tested.

EXEMPTIONS.

14. Cows eight years old or over whose yields have been recorded for three official lactation periods may be exempt.

15. Aged or injured cows in the herd at time of entry, and kept for breeding purposes, may be exempt on the recommendation of the Government Supervisor. Any injury interfering with lactation received subsequent to entry may be recorded on Certificate issued.

16. Any cow which, on veterinary examination, is found to be affected with tuberculosis shall be withdrawn from the test, and her milk shall not be allowed to be used for sale, or for the preparation of any dairy produce for sale.

17. Any cow which, on veterinary examination, is found to be affected with actinomycosis of the udder, or any other disease or condition which may temporarily render her milk injurious, may remain in the herd for testing, but her milk shall not be used for sale or for the preparation of any dairy produce for sale without permission of the Supervisor.

18. When any newly-calved cow is rendered temporarily unfit for testing by being affected with milk fever, mastitis, retention of placenta, or other ailment affecting newly-calved cows, the period elapsing between the calving and entrance to the official lactation period may be extended on the recommendation of a Veterinary Officer or Supervisor, but such period shall not exceed one month from date of calving.

19. Any interpretation or decision in respect of these Regulations, or in respect of any matter concerning the Certification, which receives the written approval of the Director of Agriculture, shall be final.

20. Should the owner of any herd entered not conform to these Regulations, such herd shall be subject to disqualification for such period as the Minister shall determine. The Minister retains the right to withdraw any Certificate when, to his satisfaction, good and sufficient cause is shown.



WORLD'S CHAMPION RED POLL—"MURIA."

The First Australian Thousand Pound Butter Cow.

By R. R. Kerr, Dairy Supervisor.

If any one had predicted that the past season—the most disastrous in the history of the dairying industry of Victoria—would bring to light the first Australian cow to produce 1,000 lbs. of butter and nearly 1,500 gallons of milk, and, further, that the cow would not be a member of one of the special dairy breeds, such a prophet would have been treated with scant courtesy.



A Pair of Deep Milkers.

"Muria"—World's Champion Red Poll, on the right.

To the great majority of Victorian dairy farmers, and, for that matter, to the writer himself, the 1,000-lb. butter-cow was something of a myth, and existed only where extreme means were taken to force-feed, and give undivided attention. We have been too apt to cast

doubt upon the records made in distant lands, but it would appear that there is no reason why such envied yields should not be recorded in this State, where ideal conditions prevail, and our cattle have no long, dreary winters to contend with, such as occur in the older dairy-countries of the world.

In previous years the cow *Muria* has always stood well forward in the Government herd of Red Polls, established by the Victorian Department of Agriculture at the Central Research Farm, Werribee. In the season 1912-1913 she was the leading cow in the herd as regards yield. Last year she was only a few pounds of butter-fat short of the leading cow, *Cigarette*, which latter, however, had the advantage of one month lengthier milking period. But this year she has eclipsed all previous performances in the herd, and has given the following phenomenal yield:—

Milk yield, 14,972 lbs., from July 25th, 1914, to July 25th, 1915 (365 days).

Average butter fat percentage, 5.91.

Total butter fat, 884.16 lbs.

Total commercial butter, 1,007 lbs.

Total solids in milk, 15.71 per cent.

Value of produce at the rate of 1s. per lb. of butter fat, £44 4s. 2d.

Note.—(1) The butter fat percentage is the average of twelve tests of a composite sample of morning's and evening's milk. (2) The commercial butter is calculated on an overrun of 14 per cent. only.

This yield establishes a record in at least two respects, viz.:—

1. The highest authenticated yield of both milk and butter-fat from a Red Poll cow in any part of the world, and
2. The highest authenticated or recorded yield of butter-fat from a cow of any breed in Australia.

The previous best yields that have been recorded for Red Polls in any country, and for any breed in Australia, are given alongside of those of *Muria* for comparison—

—	<i>Muria's</i> Record (1 year).	Red Poll. World's Record.	All Breeds. Australian Records.
Milk ..	14,972 lbs.	<i>Mona</i> , 14,713 lbs. (England)	<i>Lily III.</i> , of Darbalara (Short-horn), N.S.W., 12 months' yield, 17,599 lbs.
Butter fat ..	884.16 lbs.	<i>Pear</i> , 603.66 lbs. (Minnesota, U.S.A.)	<i>Linda</i> of Gowrie Park (Ayrshire), Vic., 9 months' yield, 640.5 lbs.
Butter	1,007 lbs.		<i>Leda's</i> <i>Snowdrop</i> (imp. Jersey), N.S.W., 12 months' yield, 796 lbs.

Muria's record was put up in her fifth lactation period, and although her average butter-fat test, as shown above (5.9 per cent.) is far beyond the ordinary, it is not an accidental or freak test; for though she has always been a high-testing cow, she has gradually improved in this respect each year. On her first calf her average test over the whole milking period was 4.39 per cent.; second calf, 4.75 per cent.; third calf, 5.44 per cent.; fourth calf, 5.08 per cent.; and fifth calf, 5.91 per cent.

Except in one respect, *Muria* had no advantage over other cows in the herd. She failed to get in calf until two months before her record

year was completed, so that for ten months her system was devoted solely to milk production, and her energies in this respect were not impaired by the demands of pregnancy. She was fed fully and well with a liberal allowance of concentrated foodstuffs added to the bulk roughage (see food table and cost below); but in other respects her treatment was in no wise different from the rest of the herd or from that of any cow in any ordinarily well-cared-for herd in the State. She ran with the other forty-odd cows throughout the year, being driven back and forward from the paddock to the milking-shed for the morning and evening milking daily with the rest. She was never housed at night, and had no protection from the weather at any time of the year beyond the wearing of an ordinary covering at night-time during the winter months. Had she been milked four times a day, and given the other coddling and hothouse treatment that is regularly accorded to candidates for records in America, her yield might have been correspondingly increased, but her record would have been less valuable as an indication of robust and vigorous dairying capacity.

The following table setting out Muria's monthly yields should be interesting. It will be seen that her highest yield was given in August, the month following that in which she calved. During this month she yielded 1,652½ lbs. of milk, containing 97.66 lbs. of fat (5.9 per cent.). The daily average of butter for the month was 3.15 lbs., equal to 25½ lbs. of butter per week. Her average daily yield of milk throughout the whole year was over 4 gallons (41 lbs.), and on the 365th day she gave 26 lbs. of milk.

MONTHLY YIELDS.

	Lbs. Milk.	Days.	Test.
July 25th to Aug. 1st, 1914	274	7	—
Aug. 1st to Sept. 1st, 1914	1,652½	31	5.91
Sept. 1st to Oct. 1st, 1914	1,517	30	5.28
Oct. 1st to Nov. 1st, 1914	1,487½	31	5.44
Nov. 1st to Dec. 1st, 1914	1,424½	30	5.24
Dec. 1st to Jan. 1st, 1915	1,435½	31	5.36
Jan. 1st to Feb. 1st, 1915	1,415½	31	5.53
Feb. 1st to Mar. 1st, 1915	1,232	28	6.50
Mar. 1st to Apl. 1st, 1915	1,163½	31	6.36
Apl. 1st to May 1st, 1915	916	30	6.28
May 1st to June 1st, 1915	940½	31	7.05
June 1st to July 1st, 1915	854	30	6.46
July 1st to July 25th, 1915	659½	24	6.66
Total	14,972	365	5.91

Muria finished the year in prime condition, her live weight being 1,218 lbs. Thus her year's milk yield was 12½ times her own weight, being over 6½ tons, and containing nearly half a ton of butter. She is a low-set cow, with a splendidly-shaped udder and well-spaced, medium-sized teats.

FOOD SUPPLIED (QUANTITIES AND COST).

As stated previously, Muria was running with the herd during the whole period, on pasture so bare as to be negligible in calculating the food cost. She was fed with the rest of the herd four times daily—twice in the bails at milking-time, and twice outside from racks, morning and evening. The food she got outside (lucerne hay and greenstuff) is recorded as the average allowance for each cow in the herd, the total amount fed having been weighed in bulk over the weighbridge. The values charged in the table are the normal values in an ordinary year, and correspondingly the value of the yield of butter has been given at the ordinary normal price of 1s. per lb. of butter-fat. It will be noted that the cost of concentrates fed (bran, &c.) is about half the total cost of the feed, and while this may appear extravagant, the net profit shown by the yield over the cost is convincing proof of the wisdom of feeding concentrates heavily to deep-milking cows, so long as they give a profitable response in the pail. Table as follows:—

			£	s.	d.
Silage	..	3,570 lbs. at £1 0 0 per ton	=	1	11 10
Bran	..	3,691 lbs. at £5 0 0 ..	=	9	4 6
Oat Chaff	..	1,713 lbs. at £2 15 0 ..	=	2	2 0
Lucerne Hay	..	3,166 lbs. at £3 0 0 ..	=	4	4 10
Green stuff	..	8,400 lbs. at £0 15 0 ..	=	2	16 3
Gluten Meal	..	200 lbs. at £6 0 0 ..	=	0	12 0
Total	..	23,740 lbs.	£20	11	5

VALUE OF MURIA'S YIELD COMPARED.

Assuming that $2\frac{1}{2}$ lbs. of fresh milk is equal to 1 lb. of lean meat—the 1,497 gallons of milk produced would be equal to 5,988 lbs. of meat—an amount that would require about six good bullocks to provide.

Taking the butter-fat in the milk alone, the value at 1s. per lb. is £44 4s. 2d., and, assuming £10 as the value of a good steer in normal years, the value of Muria's fat production is greater than the ordinary market price of four steers. Again, if the value of her milk yield is put at 8d. per gallon, *i.e.*, £49 18s. 1d., then her yield was equal to the value of five steers.

Muria produced that amount in one season, in addition to a good calf, which was sold for £18 18s., while the five steers would take four or five years to mature and reach the corresponding value.

PROFIT AND LOSS ACCOUNT.

Muria's feed cost was £20 11s. 5d., to which may be added £4 8s. 7d. as the cost of labour, the total cost being thus £25. On this basis it will be seen that the butter-fat cost $6\frac{3}{4}$ d. per lb. to produce, and the milk 4d. per gallon.

Therefore:—

	£	s.	d.	£	s.	d.
Credit—Milk, 14,972 lbs. at 8d. per gallon (101lbs.)	49	18	1	
Value of manure	2	10	0	
Sale of calf	18	18	0	
				71	6	1
Debit—Cost of feed and labour	25	0	0
Net profit for year	£46	6	1

WHEAT AND THE WAR.

By A. E. F. Richardson, M.A., B.Sc., Agricultural Superintendent.

II.

In a former article (written November, 1914) a historical summary of the effect of continental wars on London wheat prices over a period of 150 years was given. It was shown that in times of war prices fluctuated violently, and were relatively high, and that the high level of prices continued for some years after the declaration of peace. A statistical review of the world's wheat production for the past thirty years was given, and from a study of the statistics of world's production and consumption for 1914 it was concluded that wheat prices must inevitably advance beyond the then existing prices (44s. per quarter). Since then prices have fluctuated from 55s. to 66s. per quarter.

It was also argued that, as an era of high prices was being ushered in, there was a fine opportunity for Australia in general—and Victoria in particular—to profitably increase the volume of agricultural production. Detailed figures were given to show that a seeding of 4,100,000 acres of wheat, or an increase of 35 per cent. in acreage, could reasonably be expected from Victoria in 1915. Finally, it was pointed out that a survey of meteorological records of the Commonwealth States for the past forty years showed that droughty seasons were invariably followed by seasons of heavy winter rainfalls, and that this should be an additional incentive for planting a record acreage this season.

The official figures for the area under wheat for Victoria for 1915 were recently published by the Government Statist, and they show that the acreage under wheat this season is 4,160,800 acres.

Judging by the flooded state of our rivers, it would appear as if the winter rainfall this season will far exceed the average.

In the present article it is proposed to consider the rise in prices that has taken place since the previous article was written, the factors responsible for this rise, and the prospects for the future.

I.—THE RISE OF WHEAT PRICES.

Immediately after the declaration of war all the European countries hastened to protect themselves by two administrative Acts—(1) The prohibition of export of wheat. (2) The abolition of Customs duties on foreign wheat. This applied not only to countries which ordinarily import wheat, *e.g.*, Germany, Austria, Belgium, France, Great Britain, Italy, Holland, and Switzerland, but also to exporting countries like Roumania, Canada, Argentine.

In the case of the importing countries the prohibition has probably been rigidly enforced, but the exporting countries have since permitted export under special permit.

The import duties were, in most cases, considerable, *e.g.*, in Germany the import duty was 11s. 10d. per quarter, Austria 11s. 6d. per quarter, France 12s. 3d. per quarter, Italy 13s. per quarter. The effect of the abolition of import duties would naturally be to encourage the import of wheat into these countries.

Since July, 1914, there has been an enormous rise in the price of wheat in all countries except France, and in February, 1915, the price of wheat in Great Britain, Italy, Canada, and United States was 60 per cent.—90 per cent. higher than pre-war prices. The following table summarizes the price of wheat in the principal wheat markets of the world in February, 1915, as compared with prices at the outbreak of war. The figures are extracted from the records of the International Institute of Agriculture, Rome:—

TABLE I.—SHOWING RISE OF PRICES OF WHEAT IN IMPORTING AND EXPORTING COUNTRIES.

Country.	Market.	Class of Wheat.	Price per Quarter (8 bushels).	
			At Outbreak of War, July, 1914.	12th February, 1915.
			Shillings per Quarter.	Shillings per Quarter.
IMPORTING COUNTRIES.				
Great Britain ..	Liverpool ..	Manitoba No. 2 ..	35·5	65·8
France ..	Paris ..	National ..	47·2	54·7
Italy ..	Genoa ..	National ..	45·5	72·6
EXPORTING COUNTRIES.				
Canada ..	Winnipeg ..	Northern No. 2 ..	29·5	49·6
United States ..	Chicago ..	Hard Winter No. 2 ..	27·0	52·1
Argentina ..	Buenos Ayres	Barletta ..	33·1	45·2

PERCENTAGE OF RISE COMPARED WITH PRE-WAR PRICES.

	Per Cent.		Per Cent.
Great Britain	= 86	Canada	= 70
France	= 16	United States	= 93
Italy	= 57	Argentina	= 37

The small increase in price in France up to February is probably due to the large imports immediately following the declaration of war, and the abolition of the import duty of 12s. 3d. per quarter.

Within five months France had imported twenty-nine million bushels of wheat to supplement her own supplies.

The high price in Italy was due to fears of a scarcity of wheat, due to the fact that, though Italy had only an average crop in 1914, she had imported during the first five months of the war only 6,300,000 bushels of wheat, as against a normal import for this period of 20,000,000 bushels. During the period under review there has been a great increase in the difference of price between the exporting and importing markets, and this increase, of course, has to cover the cost of transport, handling, insurance, and war risk, and middleman's profits. There has also been a great increase in price of wheat in the exporting markets themselves—Chicago, Winnipeg, and Buenos Ayres.

II.—CAUSE OF THE HIGH PRICES.

Let us consider the factors responsible for this rise in price, for this will enable us to appreciate the probable position of Australian wheat when harvest time comes round.

The price of wheat to-day in London is 56s. per quarter, or 7s. per bushel, c.i.f. and e., *i.e.*, cost, insurance, freight, war risk, and exchange.

Many factors have been responsible for the increase in price over pre-war times. The most important of these factors are: (1) Increased cost of freight, war risk, and exchange; (2) shortage of wheat production for 1914 in Europe, Canada, and Australia; (3) destruction of grain crops and foodstuffs in the zone of conflict; (4) sentimental reasons, bringing in the psychological factor, viz., the uncertainty of what is to happen, leading to large imports by neutral countries and belligerents. Let us consider these factors seriatim.

INCREASED COST OF FREIGHT, ETC.

The increased cost of freight has been a most important factor in causing a rise in price in the importing markets. The total disappearance of the German mercantile marine from the high seas, and the commandeering of a large percentage of the British ships for transport of troops and munitions of war, have resulted in the supply of ships falling very far short of the demand. As a result freights have risen in every part of the world in a remarkable manner. As an example, we may consider the freights on wheat from Argentine, United States, and India to Liverpool and Genoa in February, 1915, with those of the previous two years. The following figures (taken from the Daily Freight Register) illustrate the point:—

TABLE I.—SHOWING FREIGHTS ON WHEAT IN SHILLINGS PER TON FOR THE PAST THREE YEARS FROM UNITED STATES, ARGENTINA, AND INDIA, TO LIVERPOOL AND GENOA.

From—	To—	February, 1913.	February, 1914.	February, 1915.
		<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
New York ..	Liverpool ..	15 0	6 1	34 5
River Plate ..	" ..	22 6	8 0	72 6
Bombay ..	" ..	19 0	13 6	50 0
New York ..	Mediterranean ..	23 11 ¹ / ₂	12 10	47 10
Buenos Ayres ..	" ..	16 3	5 9	52 11
Bombay ..	" ..	19 0	12 0	45 0

The freights prevailing prior to the outbreak of the war were exceptionally low. Those of the previous year (1913) are nearer normal figures. But the figures show an extraordinary increase in the price of freight. The greatest increase has been noted in Argentine freights. The freight in February last was nine times what it was at the outbreak of war.

The freight on wheat from Melbourne to the United Kingdom prior to the war was approximately 30s. per ton, or 10d. per bushel. The present quotation is in the neighbourhood of 85s. per ton, or 2s. 3d. per bushel. The question of freight is the most serious problem in the financing of the Australian wheat crop. With freights fluctuating from

week to week the ordinary wheat trader must take bigger risks in shipping wheat than in ordinary years, and will require additional recompense for this risk. Insurance has increased from 12s. 6d. to 17s. 6d. per cent. and telegraphic exchange from £1 to £1 10s. per cent. These extra prices cause a corresponding decrease in the export value of the wheat.

OBSTRUCTION OF SUPPLIES.

One of the most potent factors in the grain market has been the locking up of Russian supplies, owing to the closing of the Dardanelles. The enforced withdrawal of Russia's surplus from the world's markets has been largely instrumental in forcing up the price. No figures are available as to the probable supplies of wheat at Black Sea ports, but the amount must be in the neighbourhood of one hundred million bushels. The locking of the Dardanelles has had the same effect on markets as a severe crop failure, causing, pro tanto, a shortage in the world's available supply.

The possibility of forcing the Dardanelles and the consequent liberation of the imprisoned Russian surplus has been responsible for violent fluctuations in price during the past four months. The sharp rise of wheat prices last February was dramatically checked by the Allied attack on the Dardanelles, which in its early stages was regarded to mean a speedy opening up of the Straits. As soon as the Allied guns began to batter the forts, British farmers began to rush supplies on the market, and the price of British wheat dropped to 52s. per quarter. When it became clear that the forcing of the Straits would be a protracted task, the price recovered, and 68s. 6d. was given for British wheat in May. Since then the price has once more eased to 55s.

SHORTAGE OF WHEAT PRODUCTION IN 1914-15.

Exactly what quantity of wheat was actually harvested in 1914 will probably not be known until the declaration of peace. There seems to be little doubt, as pointed out in Article I., that the world's wheat crop in 1914 was only 90 per cent. of that obtained the previous year. Such shortage would naturally react on the market values, and stiffen prices, but this would gradually bring a compensating factor into operation. As prices continue to rise, economy would be effected in using wheat, less grain would be fed to stock, other and cheaper foodstuffs would begin to replace wheat, and consumption slacken; so, even a 90 per cent. harvest could be made to suffice. Such diminution in wheat consumption is possible, however, only when other foodstuffs remain relatively low in price.

DESTRUCTION OF GRAIN AND FOODSTUFFS IN ZONE OF CONFLICT.

There can be no doubt that vast quantities of foodstuffs were destroyed and crops devastated during the summer of 1914 in Poland, East Prussia, Galicia, Belgium, and France. So far as the Eastern area of conflict is concerned, the information received is meagre, but in the continual ebb and flow of the thousand-mile battle front we know that immense quantities of grain and flour have been destroyed by both combatants.

So far as the Western front is concerned, Daniel Zolla, in discussing (*Revue des Deux Mondes*) the Agricultural Production of France and the Public Food Supply, throws interesting light on the subject of crop

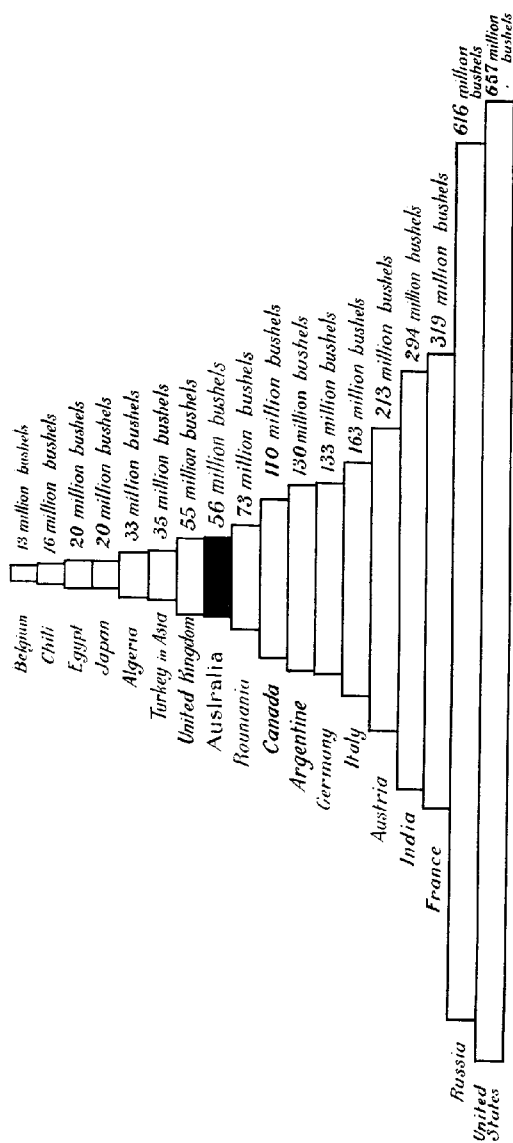


Diagram showing Average Yearly Production of Wheat for past ten years in various wheat-growing countries of the world.

destruction by the enemy, and incidentally shows the difficulties confronting agricultural production in the belligerent countries. He points out that on the day of mobilisation (2nd August) a large part of the wheat and oat harvest of France had not been threshed—the grain was still in the ear—and that in all the districts successively traversed or occupied by the combatants, the enemy destroyed the greater portion of the harvest, the cattle, and the fodder necessary for the support of these animals.

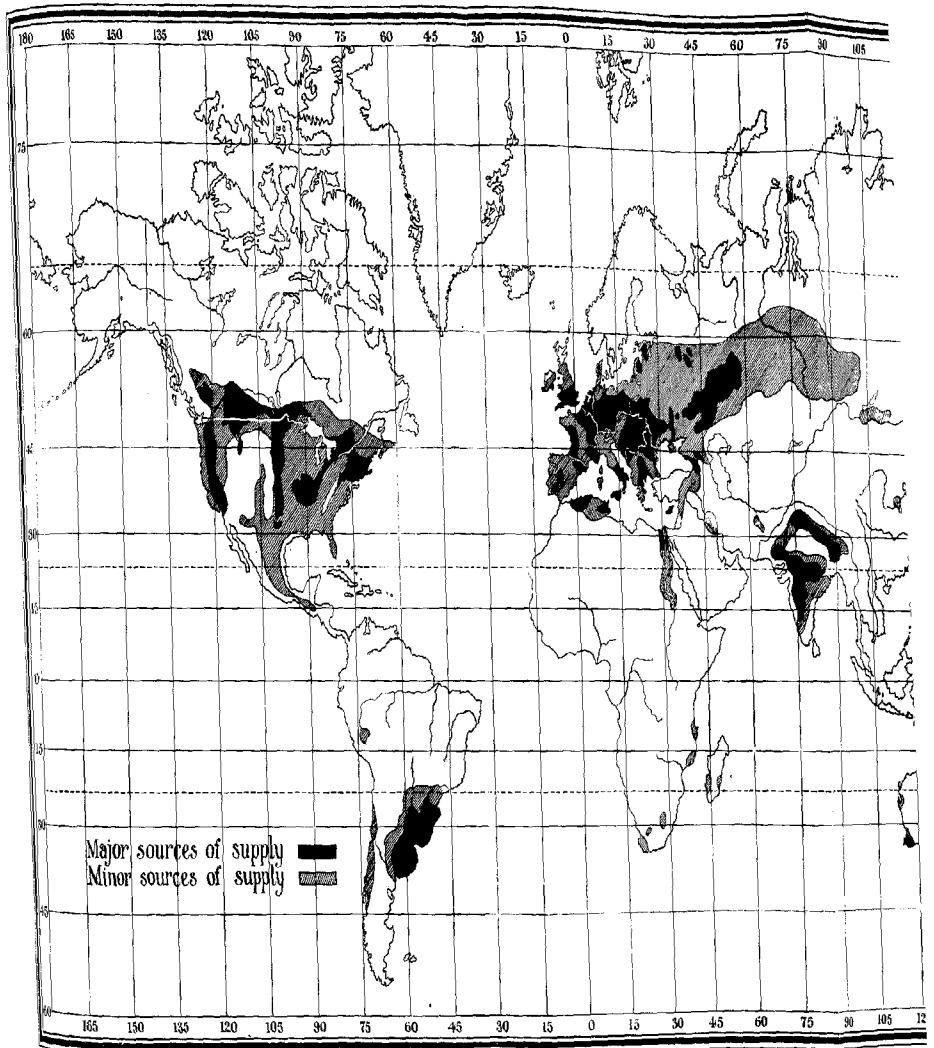
The areas invaded normally produced 18 per cent. of the French wheat crop and 25 per cent. of the French oat crop, *i.e.*, sixty-two million bushels of wheat and forty-four million bushels of oats. The departments occupied by the enemy—Aisne, Ardennes, Meurthe, Marne, Meuse, Nord, Pas de Calais, Oise, Vosges—possess 1,600,000 cattle, 1,450,000 sheep, 654,000 pigs, and these have been decimated. They represent one-tenth of the total farm stock of France, and a capital of £20,000,000. The greatest losses have occurred in the sugar beet crop. The departments invaded produced no less than 580,000 tons—80 per cent. of the total production of sugar of France. These sugar beets are normally dug in October, but most of the sugarworks and distilleries have been wrecked, and will not be able to receive beet-root at the proper time. In discussing the future harvest, Zolla says:—

“We believe that agricultural production suffices for the time being for the needs of consumption, and that the general food supply is assured for nine or ten months. Certainly this is very satisfactory, but it is necessary to think of a more distant future. Agriculture should prepare, and that certainly a long way ahead, for the harvest of the year following.

“What is going to be done? What can be done to see that the 1915 harvest is sufficient for our needs and to spare France a scarcity in 1916? The problem is important enough to be fairly set out and studied.

“Certainly the public is often badly informed when agriculture is in question, but nobody is ignorant of the fact that land is productive only if properly prepared—that is, properly manured and properly sown. How should all this be done to secure a good crop for next year? It is not a duty that can be put off except at the risk of ruin or serious danger to the crop. Strictly speaking, autumn sowings might be sown at the end of winter, but that is a deplorable expedient. Wheat sown in October to December is nearly always better than that sown in February and March. Autumn ploughing is, so to say, indispensable. Not carefully it is not a question of an operation limited to a small area. For wheat alone, six million hectares (14,826,600 acres) must be prepared, and time presses, for the work should commence in a fortnight, or at least in a month. But the land is covered with crops—crops of potatoes, crops of sugar beet or fodder beet. It is a tremendous task when nobody remains on the farms but women, children, and old men. The teams are short. Many horses have been requisitioned; many oxen have been sold. The fact cannot be concealed—in many cases our fields will remain fallow till Spring. The vines will not be ruined or receive proper treatment. But we have confidence in the unconquerable energy of the country population. From one end of the country to the other efforts like miracles will be made, and just as our young men will show their bravery on the frontier, the guardian of the family at the hearth will raise himself up, strong, ingenious, and obstinate. Our old land has produced defenders; under the efforts of those who remain it will still produce harvests. In this respect the subdivision of property and of cultivation will facilitate a task which the employment of paid labour on large areas would make almost an impossibility. Disasters will at least be limited, if not avoided, and to announce famine and foresee the barrenness of our neglected fields would be to misunderstand badly the courage of the French peasantry, whether men or women.”

Probably the greatest destruction of crops and foodstuffs has taken place along the Eastern front, and especially in Poland and Galicia. Poland produced in 1908 21 million bushels of wheat, 78 million bushels



MAP ILLUSTRATING WORLD'S WHEAT PRODUCTION ALSO MAJOR & MINOR SOURCE

of rye, 66 million bushels of oats, and 24 million bushels of barley. It is the most densely populated of all Russian provinces, the average density of population being 232 per square mile. It is significant that the recent great drive by the enemy in Poland coincided with the ripening of the wheat and rye crops. Thus Professor A. J. Voerkov, of the Petrograd University, points out that the mean ripening period of wheat in Poland is 6th August, that of rye 27th July, and oats 19th August. There can be little doubt that the greater portion of the growing crops and stores of grain in Galicia, Poland, and the Baltic provinces were destroyed by the Russians in their recent retirement. This will cause the reserves of grain that might otherwise have been exported to be drawn upon, and less will, therefore, be available for export, when the Dardanelles are opened.

III.—THE PROSPECTS OF THE 1915 WORLD CROP.

IN Article I. we saw that the estimated world crop for 1914 was likely to be about 90 per cent. of the previous year's production. What was the actual crop?

In the Northern Hemisphere the wheat harvest begins in India in March, and continues in one country or another till September, the largest area being reaped in July and August. In October and November there is practically no wheat reaped anywhere in the world. In December and January Australia and Argentina take off their harvests. In February there is a blank. Consequently the world harvest is usually reckoned as being finished in February.

According to the International Institute of Agriculture, Rome, the production for the year 1914 (ending February, 1915) was 3,914,048,000 bushels, as against a production in 1913 of 4,241,528,000 bushels, *i.e.*, 92 per cent. of the previous year.

What will be the production of 1915? If we could forecast this we should be in a very good position to estimate the probable variation of prices.

In the first place, the belligerent countries have special reasons for straining every nerve to increase the area sown for the next harvest, whilst, on the other hand, they will find it difficult to sow the usual area, owing to the withdrawal of a large proportion of their male agricultural population for military service, the scarcity of manures, the want of sufficient farm animals, and the actual threatened presence of troops on part of their wheat-producing area.

Consider the immense task confronting French agriculture, in view of the difficulties described above by Zolla. Nor is the task confronting Germany and Austria less formidable.

Even if we disregard the human factor—the shortage of men engaged in agriculture in these countries—other considerations will show how vitally agricultural interests have been affected by the war. With the declaration of war all trading with the enemy ceased. Potassic manures, nearly all of which come from Stassfurt in Germany, have been cut off from England, France, and Russia; whilst, on the other hand, all supplies of nitrate of soda from Chile and Peru have been cut off from the enemy by the British Fleet.

Nitrate of soda is as important a manure to European agriculture as is superphosphate to Australian agriculturists. Potash, not generally used on wheat crops, is very widely used for roots and grass in Britain

and France, consequently the dislocation caused by the lack of potash on the one side and the lack of nitrate of soda on the other will seriously interfere with crop yields this summer.

Again, these countries all practice intense culture. They must do this to maintain such dense, crowded populations. But intense culture is inseparably bound up with plentiful supplies of labour and very thorough working and preparation of the land, and conservative, long established systems of crop rotation. It may be supposed that these countries will endeavour to increase the acreage sown to wheat, in view of the high price and possible shortage. But, with an intensive system of farming, it is not easy to break away from a rotation that has been hallowed through generations of custom in order to augment the area of any one crop; indeed, to do so might prove fatal to the nation's interest.

The area under oats, for example, must not be reduced, for this grain may conceivably be as useful to a nation at war as wheat; and, judging by prices, oats are wanted more badly in enemy countries than wheat. Nor can the area under potatoes be diminished, for potatoes will certainly produce more food per acre than will wheat. If the cultivation of this crop be diminished (and the sowing of potatoes requires much labour and careful soil preparation) there will be a serious falling off in the food supply, and a greater demand will set in for wheat. Nor must the quantities of fodder produced be curtailed, for the meat supply must, under any circumstances, be maintained, for meat is essential for all modern troops. The modern army fights "on its stomach," and meat is as necessary as bread. Experience of previous wars, when England was less dependent on foreign supplies for wheat, shows conclusively that high prices ruling for wheat in previous continental wars did not lead to a material increase in the area sown to this cereal. Statistics of the present crop show that in spite of the special encouragement given to British farmers the production for 1915 has not materially increased. All these obstacles must result in a reduction of (1) the area sown; (2) the average outturn per acre in Europe. All round it may be estimated that the total yield of Europe cannot be more than 80 to 85 per cent. of its normal production for the past five years; and this, taken by itself, will mean a diminution of 8 to 10 per cent. in the world's annual crop. The shortage may possibly be greater.

The accompanying map of the world shows the major and minor sources of wheat supply of the world, and brings home very forcibly the immense acreages sown to wheat in Europe, and how a shortage in European production must necessitate vastly increased output in the new world, if an actual shortage is to be avoided.

The average annual production of wheat for the past ten years in each of the more important wheat countries of the world is shown in the accompanying diagram (page 549). It vividly portrays the enormous wheat production in the belligerent countries as compared with the rest of the world, as well as the comparatively insignificant position occupied by Australia among the world's wheat producers. If there are any who still think that accelerated wheat production in Australia will materially lower the world's price of wheat, a glance at this diagram should give stimulating food for thought.

Can India, United States, Canada, Argentina, and Australia make up for Europe's deficiency and Europe's requirements in 1915?

(To be continued.)

RED POLL DAIRY CATTLE.

Report on the Departmental Herd for Season 1914-15.

By R. R. Kerr, Dairy Supervisor, Central Research Farm, Werribee.

In submitting the report for 1914-15 on the Red Poll Herd at the Research Farm, Werribee, some mention must be made of the severe drought, which has dealt so severe a blow to our dairying industry that some years must elapse before complete recovery is possible.

Many thousands of our best dairy cattle have died, and many others in good condition have been slaughtered for beef, to supply the needs of the meat market. This drought has been the most severe in the history of the dairying industry in Victoria, as it affected not only the



"Butter and Beef."

This Red Poll appears to supply an answer to the question frequently asked—
"Is there a genuine dual purpose breed?"

northern areas, but also the famous Western District, which has so often been our standby in the past.

On this occasion great havoc was wrought in this favored district, where not half the farmers make any fodder provision for their dairy cattle. The recent drought found them unprepared. It is to be hoped the lesson will be taken to heart, and ample provision made in the future. Usually in this fair province, green fodders grow well, and pastures are plentiful. Farmers do not seem to realize the value of grass hay—it has a feeding value nearly equal to oaten hay, and when well cured is just as palatable. Then again the silo is not yet firmly established—filled, it stands as a sentinel guarding its owner against drought.

Rates, taxes, &c., are often the cause of much criticism, but many times the amount of these is lost owing to neglect in providing sufficient fodder to carry the cattle through times of scarcity. This holds true also when duffer cows are permitted to remain in a herd.

This gambling in the dairy business should cease; we must make provision for the lean years and the dry times; summer crops must be grown or silage provided.

A commercial institution has its reserve fund, and the farmer's reserve fund should be sufficient stacks of fodder, or a well filled silo. Government officers have for many years continually emphasised the conservation of fodder crops and the testing of cows.

When these important factors towards success are realized, then we can compete with other countries on an equal footing. It is hoped that the lesson taught this year may be of everlasting benefit to the farmers, and arouse in them some humane consideration for their cattle.



"Vuelta," one of the Department's High Testing Cows.

Milk yield, 1914-15, 34 weeks, 7,560 lbs.; butter fat test, 4.4; butter fat yield, 338.28 lbs.; commercial butter, 385.64 lbs.; value, £16 18s. 3d.

While only eighteen months have elapsed since the Red Poll herd was taken to Werribee, the conservation of fodder was especially borne in mind, and a large reserve of silage was the means of enabling the cattle to greatly increase their yearly average in a season when so many failed, and prices for produce so high—the time when an intelligent, thoughtful farmer reaps his just reward.

Any neglect in feeding dairy cattle has a far reaching effect, and the condition of the cattle one season will probably affect the next year's production. On the other hand, plenteous feeding builds up a reserve in the animal's body, and often allows a dairy cow to maintain a fair yield, though on a ration short of the desired nutrients. During the past season, the restricted supply of concentrates necessitated the dropping of bran from the ration, and since last September only the following cows received 3 lbs. bran each daily:—"Vuelta," "Sumatra," "Persica,"

"Europa," "Goldleaf," "Mexicana," "Egypta," "Pennsylvania," "Cuba," "Bullion," "Birdseye," "Virginia," "Muria," the subject of a special report, received varying amounts up to 12 lbs. daily, and was easily the most profitable cow in the herd. This restricted feeding will affect the following year's average, cows last season giving a gallon a day more. Many, however, are giving over 4 gallons a day now, while "Netherlana," full of dairy quality, is yielding 50 lbs. daily.

The 3 lbs. of bran mentioned above is insufficient to maintain the heavy flow, such as many of the Red Polls yield. While the general balanced ration is placed at $2\frac{1}{2}$ lbs. of protein, $\frac{1}{2}$ lb. of fat, and 12 of carbohydrates, many cows need a much greater quantity of protein and exceptional cows will yield a profit on over 3 lbs. of protein.

In feeding for production the individuality of the cow is of the greatest importance, some animals will be at their maximum on 3 lbs. of concentrates, others can profitably be fed 12 lbs.

Although some restricted investigations were made on account of the intervention of the drought year, the programme of feeding experiments of an extended form has not yet been fully entered on. The findings therefrom should prove of great interest to students of dairy economics, and arouse an interest in dairy farming and animal feeding. At present a great loss is experienced through lack of knowledge of that important subject—Foods and Feeding.

In the previous report special mention was made of the dual purpose qualities of the Red Poll breed—the year's experience has proved this to a marked degree. For example, "Atlanta," which produced 315 lbs. butter on her first calf, and after milking eight months on her second period, and when yielding 16 lbs. of 5 per cent. milk daily, weighed 1570 lbs. live weight. Then again "Cigarette," which last season produced over 1,000 gallons of milk and 448 lbs. of butter, sold for £22 7s. 6d. at the Melbourne yards in the month of May: and two others, "Gilt" (4 years) and "Crimson Thread" (3 years) realized £29 and £27 per head in the Melbourne fat stock yards in August.

Despite all arguments to the contrary, the beef and milk producing qualities are combined in the Red Polls, though continual selection for milk production over a number of years may possibly result in a less beefy animal, as development in one particular line is always considered to be at the expense of some other quality. Apart from their beef qualities, however, the season's records show that this herd compares very favorably with the best of the herds of the special dairy breeds.

Many visitors to the farm when inspecting the herd have made the comment, "Too fat for milking, all fit for the butcher." The records answer the "too fat" remarks, which generally come from admirers of the special dairy breeds. No good judge of cattle, with a lengthy experience, who makes an impartial decision, will deny the superiority of the Red Poll when the object is milk production combined with beef raising.

When it comes to a battle for existence in drought times, the Red Poll will be one of the last to succumb. As a great shortage exists in the meat markets of the world, and an alarming depletion of our flocks and herds has occurred, high prices for beef are predicted in the future, Red Polls



"Longford Major" (imp.) 2 years old.

Imported by the Department of Agriculture, Victoria. Dam's record, 1,471 gallons; average over 6 years, 1,138 gallons.



"Belligerent" (imp.) yearling.

Imported by the Department of Agriculture, Victoria. (The milk records of nine of the female ancestors of this young bull average over 1,000 gallons of milk per annum, extending over from 2 to 12 lactation periods—average of seven years.)

will assuredly be one of the breds to replenish the wastage because of the ability of the breed to produce good beef animals. When Red Polls sires are used with other breeds 80 per cent. of the resultant progeny are hornless, and have the rich red colour of the breed. As beef cattle they are greatly in demand in England, and compare very well with other beef breeds, dressing up to 73.72 per cent. of the live weight. This, according to the *London Live Stock Journal*, had only once been exceeded in England at that time, and never by a full blood steer of any breed.

Many inquiries are made from farmers and graziers anxious to become possessed of the breed. The hornless character of the Red Poll is one of its strongest points, and largely accounts for the exceptional docility of the herd at Werribee. Nearly every large herd in the main dairying districts contains many cows injured or ruined by those useless ornaments, horns, and all dairy calves should be dehorned when a few days old. No such accidents occur with Red Polls.

The Young Stock.

Seven heifers were tried during the season, and the majority of them show promise of heavy milk production, fresh drafts into the herd are milking well, but have not concluded their term.

The older members of the herd have set up a very high standard, and some difficulty may be experienced in procuring a sire that will stamp a general increase of milk production in his progeny; but the recently imported sires, "Longford Major" and "Belligerent" are very promising, and come from families noted for milking qualities, as will be seen by reference to the detailed particulars of these importations in last month's *Journal*.

The year's operations and the consequent results have proved what a splendid opportunity awaits any enterprising and intelligent dairy farmer, who possesses an irrigated block on the Werribee settlement, when the water supply is assured. Land so close to Melbourne that will grow lucerne to perfection, and probably carry a beast to the acre, is pre-eminently suited for dairy farming for a town milk supply. The Department was at odd times adversely criticised for attempting to dairy at Werribee, mainly by farmers who rely on pasture for their cattle, but the return of nearly £30 per cow is sufficient answer to such critics. The selling price of the Werribee milk is estimated on a basis of 9d. per gallon, but a price much beyond this amount was obtained during part of the season.

An average yield of 900 gallons is possible from a well selected herd of special dairy cows, which would mean a return of over £30 per cow.

The returns from the Red Polls at the Research Farm, Werribee, should be a considerable factor in establishing the industry in the district. Does any other district present a better opportunity?

The herd has proved itself commercially, but the ultimate object is experimental work, when varying treatments will probably affect the yields. Breeding and feeding trials should have the loyal support of all dairy farmers who take into consideration the economics of their business.

The dairy work proceeding at the Research Station, Werribee, should help to define improved methods and their manner of application, as the standards of other countries are not always applicable to ours.

Victoria, as a dairying country, would most probably rank with the best producing countries of the Old World, but our average returns are much less, because our methods are at fault, and we do not take advantage of our opportunities.

The Year's Returns.

The average yield of 808 gallons of milk and 374 lbs. butter fat from the cows, and 559 gallons of milk and 261 lbs. butter fat from the heifers is much above the general average of herds. Ten cows gave 400 lbs. and over of fat, while six, "Muria," "Cuba," "Virginia," "Bullion," "Pennsylvania," and "Egypta," yielded over 1,000 gallons of milk. The average test of all the cows over the whole milking period was 4.6, only four cows being below 4 per cent.

"India," the last on the list of the cows, calved prematurely, before completing the previous term, and, consequently, seriously affected this year's performance.



A quartette of the Werribee Red Poll Milkers grazing a patch of green barley.

"Birdseye," "Virginia," and "Turka," were sick for portion of the time, while "Havana" and "Kentucky" suffered from lameness at intervals.

In comparison with previous years the heifers performed very well. "Pipio," ex. "Connecticut," "La Reina," ex. a daughter of "Virginia," and "Mongolia," ex. "Asiana," are welcome additions to the herd, while the others also performed satisfactorily. "La Reina," after calving prematurely, put up a splendid return.

At the time of writing the majority of the best cows are still to calve, and are in splendid condition. It was intended to compete in the butter test at the Royal Show, and if the Show had been held I feel sure the Red Polls would have made a good showing—their docility somewhat adapting them to hand feeding.

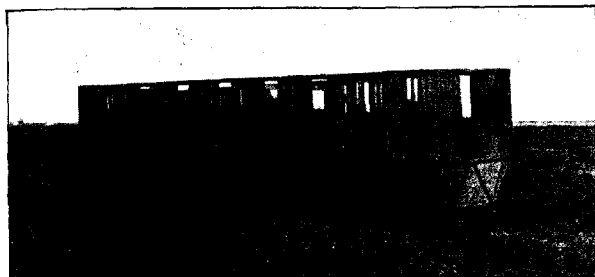
Feeding the Cows.

Realising that the feeding of the cattle is the most important item in dairy farming, and any neglect in this respect has an immediate effect on the returns, special attention was given to this subject. The old adage, "Feed is half the breed," has a great deal of truth in it. At

Werribee pasturage is very scanty, and at times non-existent, so that when the herd was brought to the farm it was decided to feed the cows twice daily in the bails, and outside once in the forenoon and again at night, making in all four times a day. This regularity in feeding is a great improvement on the twice a day method adopted in some dairies—"a contented mind is a continual feast," and it applies to the cow as well as to its master. Though methods had at times to be altered, the general practice was to feed a silage and straw mixture in the bails, and for rack feeding outside cut green stuff in a wilted condition in the forenoon, and lucerne hay at night.

The outside feeding was done in racks, easily movable, an illustration of one, the design of Dr. Cameron, is shown. This method of feeding is preferable to the old method of throwing on the ground, the amount of feed saved soon paying for the money expended in the making of the rack.

Lucerne has generally supplied the roughage, and was cut one day and fed the next. Whenever possible grazing was provided, and some of the fodder crops were used in this way. The cows generally made



Portable Rack Designed to Prevent Waste.

a slight increase in their milk yield, but spoiled a considerable portion of the feed, and it is intended to experiment in this direction to prove which is the more economical method of feeding. The general ration was—daily, 27 lbs. silage, 30 lbs. green stuff, and 8 lbs. lucerne hay.

The best silage from a milk producer's view was a cereal and legume mixture—rye, barley, oats, peas, and beans.

Maize silage was also fed, and much relished by the cows, but one point, which must be borne in mind, is that sour silage made from immature maize has a bad effect on the quality of the milk. At the beginning of the year, when the prospect for succulent fodders was at zero, it became necessary to convert some of the lucerne into silage. This was put into the silo in a slightly wilted condition, and was mixed with a small amount of oaten straw. This silage has been fed for some considerable time, and it is a splendid sample. The experience gained this year forces the opinion that no dairy farm is complete without a silo. There is far less energy used by the dairy cow when converting succulent fodders into milk than when supplied with a mass of dry feed.

Experiment in Feeding Concentrates.

Many farmers are often disappointed at the return from their cows when fed on increase of concentrates. While the conclusion in the experiment under review proves an entire waste so far as extra fat is concerned, there was an increase in the amount of milk, but not sufficient to justify the expenditure, and evidently "India" was yielding her maximum on the 3 lbs. of bran as concentrates.

This is an extreme case, and should not be taken as final, as other cows fed in the same manner paid for the increase. It serves as an instance of the desirability of knowing the individuality of every cow in the herd.

"India" was calved 27 days, and is of good temperament; the weather was mild.

Feed previous to experiment—Green lucerne 30 lbs., lucerne hay 10 lbs., silage and straw chaff mixture 17 lbs., bran 3 lbs.

The silage was replaced with bran on the 4th April, making 16 lbs. bran daily.

*Experiment No. (1).***YIELD, SEVEN DAYS PREVIOUS TO 16 LBS. BRAN.**

Date.	Lbs. Milk.	Test.	Fat Lbs.
March 29	37	4.2	1.583
" 30	37	4.1	1.549
" 31	40	4.2	1.697
April 1	39	4.1	1.620
" 2	40	4.3	1.720
" 3	42	4.3	1.806
" 4	40½	4.3	1.741
Total	275½	4.25	11.716

SEVEN DAYS RESULTS AFTER 16 LBS. BRAN.

Date.	Lbs. Milk.	Test.	Fat Lbs.
April 5	42½	3.6	1.530
" 6	43	3.7	1.624
" 7	43	3.3	1.451
" 8	43	3.2	1.376
" 9	43½	3.9	1.742
" 10	44	4.9	2.156
" 11	41½	4.2	1.753
Total	301	3.86	11.632

An increase of 25½ lbs. milk and a decrease of .084 lbs. fat.

Experiment No. (2).

Object.—Data on the theory that grazing cows on lucerne increase the fat percentage in the milk. On the four days previous normal conditions prevailed, the cattle being fed green lucerne in the racks in the forenoon—the following four days the same conditions existed except that instead of eating lucerne from the racks, the cows were allowed to graze.

Eight cows were in the group, and they were well on in their lactation period.

Feeding Method.	Lbs. Milk.	Test.	Fat Lbs.
Hand Fed	907½	4·70	42·667.
Grazing	925½	4·78	44·287

Difference in favour of grazing 18 lbs. milk and 1.62 lbs. fat.

Result.—The grazing on the lucerne shows very little increase, and probably the cutting is the more economical.

YIELDS AND RETURNS OF THE GOVERNMENT HERD OF RED POLL DAIRY CATTLE.

Season 1909-10.

Heifers.

Name.	Days in Milk.	Milk in Lbs.
Kentucky	306	4,325
Virginia	276	4,271
Cigarette	265	4,047
Havana	270	3,151
Average	287	3,951

No tests available.

Season 1910-11.

Cows (2nd Calf).

Name.	Days in Milk.	Weeks in Milk.	Milk in Lbs.	Tests.	Butter Fat (lbs.)	Commercial Butter (lbs.)	Values.
Bullion	283	40½	7,730	4·2 5·0	556·71	406½	£ s. d. 17 16 8
Virginia	283	40½	6,362	3·8 4·6	254·75	290½	12 14 9
Havana	283	40½	5,750	3·8 4·6	229·97	262½	11 10 0
Kentucky	245	35	3,510	4·0 4·6	225·08	237½	11 6 0
Cigarette	228	34	3,040	4·0 4·6	211·61	241½	10 11 7
Devilish	135	19½	3,370	4·2 4·9	200·44	228½	10 0 5
Average for 6 ..	244½	30	5,693½	4·3	246·59	281	12 4 11

Season 1910-11.

Heifers.

Name.	Days in Milk.	Weeks in Milk.	Milk in lbs.	Tests.	Butter Fat (lbs.)	Commercial Butter (lbs.)	Values.
							£ s. d.
Vuelta ..	270	38½	5,500	7-0-7-8	405-14	461½	20 5 1
Connecticut ..	283	40½	6,182	4-2-4-6	269-00	309½	13 9 0
Carolina ..	283	40½	5,700	4-2-4-8	253-14	288½	12 13 1
Muria ..	283	40½	5,480	4-2-6-2	240-70	274½	12 0 8
Cuba ..	283	40½	5,280	4-2-4-8	231-89	264½	11 11 11
Pennsylvania ..	270	38½	4,610	4-0-4-4	189-75	214½	9 9 9
Average for 6 ..	278½	34	5,465	4-7	269-94	300-12	13 4 11

Season 1911-12.

Name.	Days in Milk.	Weeks in Milk.	Milk in lbs.	Average Test.	Butter Fat (lbs.)	Commercial Butter (lbs.)	Values.
							£ s. d.
Vuelta ..	289	41½	7,750	5-2-8-2	485-1	553	24 5 1
Connecticut ..	283	40½	6,780	4-6-6-4	364-0	415	18 4 0
Bullion ..	305	43½	6,940	4-8-6-2	344-0	392½	17 4 0
Denial ..	278	39½	6,460	4-9-6-4	342-0	390½	17 2 7
Cuba ..	304	43½	7,015	4-4-8-4	337-8	385	16 17 9
Cigarette ..	291	41½	6,480	4-0-5-6	285-9	326	14 6 0
Sumatra ..	293	42	6,060	4-0-5-0	284-2	324	14 4 1
Kentucky ..	277	39½	6,090	4-0-4-8	277-7	316½	13 17 8
Muria ..	286	41	5,800	4-5-7-0	275-7	314½	13 15 8
Pennsylvania ..	318	45½	6,340	4-0-5-2	271-9	310	13 12 0
Carolina ..	226	32½	5,800	4-0-5-0	254-3	280	12 14 4
Virginia ..	277	39½	5,510	3-9-4-6	221-7	252½	11 1 9
Havana ..	262	37½	5,350	3-8-4-5	215-3	245½	10 15 4
Average for 13	283	40½	6,355	4-7	304-6	346½	15 4 7

Season 1912-13.

Name.	Days in Milk.	Weeks in Milk.	Milk in lbs.	Tests.	Butter Fat (lbs.)	Commercial Butter (lbs.)	Values.
							£ s. d.
Muria ..	256	36½	5,780	4-5-7-3	314-96	359	15 15 0
Bullion ..	289	34	6,400	3-8-6-8	295-90	339½	14 16 10
Egypt ..	295	42	6,581	3-7-5-2	283-5	323	14 3 6
Virginia ..	259	37	6,500	3-6-5-7	282-56	322	14 2 6
Cigarette ..	273	39	6,510	3-9-4-8	278-56	317½	13 18 6
Connecticut ..	320	45½	6,100	4-0-7-6	277-85	316½	13 17 9
*Vuelta ..	263	37½	6,050	3-5-5-3	273-81	312	13 18 9
Cuba ..	251	36	6,280	3-9-5-4	260-11	306½	13 9 1
Kentucky ..	267	38	6,249	3-4-4-4	256-00	291½	12 16 0
Havana ..	258	37	6,060	3-5-5-5	252-95	288½	12 12 11
Sumatra ..	230	33	5,670	3-7-5-5	238-37	171½	11 18 4
Pennsylvania ..	230	34½	4,910	3-8-5-9	215-09	245½	10 15 0
Europa ..	324	46½	4,590	3-6-7-1	201-13	229½	10 1 1
Carolina ..	274	39	4,450	3-6-6-5	198-30	226	9 18 3
Average for 14 Cows ..	267	38	5,942	4-85	259-94	295	12 19 10

* Suffered from eye accident for a considerable period.

Season 1912-13—continued.

Name.	Days in Milk.	Weeks in Milk.	Milk in lbs.	Average Test.	Butter Fat (lbs.)	Commercial Butter (lbs.)	Values.
Heifers.							
Goldleaf ..	287	41	6,599	4.1-5.3	316.50	360	£ s. d. 15 16 6
Birdsey ..	285	41	4,440	3.9-8.0	256.75	292½	12 16 9
India ..	267	38	5,231	4.1-6.2	238.27	271½	11 18 1
Persica ..	253	36½	4,130	4.6-7.7	218.69	249½	10 18 8
Turka ..	191	27½	3,593	4.6-5.9	178.27	203½	8 18 8
Mexicana ..	210	30	3,830	4.0-5.1	171.58	195½	8 11 6
Regalia ..	338	48½	3,380	4.4-6.0	161.58	184½	8 1 0
Cubana ..	273	39	3,370	4.0-5.4	153.23	174½	7 13 3
La Suelta ..	241	34½	2,660	4.3-8.2	134.23	153	6 14 3
Average for 9 Heifers	260	37	4,132	5.3	203.24	232	10 3 3

Season 1913-14.

Name.	Days in Milk.	Weeks in Milk.	Milk in lbs.	Average Test.	Butter Fat (lbs.)	Estimated Butter (lbs.)	Values.
Cows.							
Cigarette ..	328	46½	9,414½	4.12	388.25	442½	£ s. d. 19 8 3
Maria ..	296	42½	7,487½	5.08	380.25	433½	19 0 3
Birdsey ..	297	42½	6,542½	5.48	358.75	409	17 18 9
Virginia ..	304	43½	8,229	4.33	356.75	396½	17 16 3
Indiana ..	297	42½	8,177½	4.29	350.75	406	17 10 9
Sumatra ..	330	47½	7,005	4.26	323.75	368½	16 3 0
Vogel ..	286	43½	7,723½	4.14	320	364½	16 0 0
Connecticut ..	278	39½	7,166	4.47	318.25	362½	15 18 3
Persica ..	238	34½	6,654½	4.57	318	362½	15 18 0
Kentucky ..	282	39½	7,904½	3.96	313.25	357	15 13 3
Goldleaf ..	277	41	6,908	4.49	310.25	353½	15 10 3
Mexicana ..	293	41	6,773½	4.56	309.25	352½	15 9 3
Cuba ..	287	41½	6,624½	4.47	296.25	337½	14 16 3
Europa ..	302	43	6,273	4.60	289.25	329½	14 9 3
Egypta ..	268	41	6,724	4.13	277.75	316½	13 17 9
India ..	245	35	6,150	4.36	268.5	306	13 8 6
Havana ..	240	34½	6,364½	4.15	264.25	301½	13 4 3
Turka ..	289	41½	5,534½	4.60	259.75	296	12 19 9
Asia ..	260	37	4,249½	5.30	225.5	257	11 5 6
Pennsylvania ..	249	35½	5,160	4.4	212.25	242	10 12 3
Regalia ..	297	42½	4,444	4.50	200.25	228½	10 0 3
Carolina ..	231	33	4,322½	4.62	200.25	228½	10 0 3
Averages of herd of 22 cows	284½	40½	6,609½	4.49	297.25	338½	14 17 3
Heifers.							
Athana ..	300	42½	5,505½	4.90	277	315½	13 17 0
Germania ..	359	51½	4,218½	4.74	199.75	227½	9 19 9
Aretia ..	294	42	3,708½	5.16	194.5	221½	9 14 6
Schieriana ..	293	41½	4,551½	4.18	190.5	217½	9 10 6
Havana ..	290	41½	3,944½	3.95	155.75	177½	7 15 9
Melesina ..	276	39½	3,000½	3.97	146.5	167	7 6 6
Averages for 6 heifers	302	43½	4,279½	4.48	194	221	9 14 0

Season 1914-15.

Cows.

Name.	Days in Milk.	Weeks in Milk.	Milk in lbs.	Average Test.	Butter Fat (lbs.)	Commercial Butter (lbs.)	Values.
							£ s. d.
Maria ..	365	52	14,972	5.0	884.6	1,007.94	44 4 7*
Persia ..	351	50	9,607	4.9	479.94	547.13	23 19 11
Cuba ..	337	48	10,464	4.5	478.14	545.07	23 18 1
Birdseye ..	321	45½	8,522	5.5	473.73	540.12	23 13 9†
Bullion ..	321	45½	10,328	4.3	468.99	534.64	23 8 11
Virginia ..	344	49	10,252	4.4	456.76	520.13	22 16 9‡
Pennsylvania ..	348	49½	10,607	4.1	437.42	498.65	21 17 5
Sumatra ..	300	41½	9,232	4.6	431.49	491.89	21 11 6
Egypta ..	327	46½	10,616	3.9	418.55	477.14	20 18 6
Mexicana ..	282	40½	8,041	4.6	390.75	455.71	19 10 9
Europa ..	347	49½	8,765	4.4	387.11	441.30	19 7 1
Goldleaf ..	362	51½	8,415	4.4	377.67	430.54	18 17 8
Philippina ..	284	40½	6,829	5.0	343.33	391.39	17 3 4
Vuelta ..	239	34	7,560	4.4	338.28	385.64	16 18 3
Connecticut ..	259	36½	6,878	4.7	325.48	371.04	16 5 6
Turka ..	279	39½	6,395	4.9	316.07	360.31	15 16 0†
Ardath ..	332	47½	6,261	4.8	302.91	345.31	15 2 10
Asiana ..	279	39½	5,933	4.9	292.01	332.62	14 12 0
Notherplana ..	292	41½	6,903	4.2	291.78	332.62	14 11 9
Havana ..	325	46½	7,901	4.0	285.88	325.88	14 5 10‡
Cameo ..	303	43½	5,536	5.1	285.60	325.58	14 5 7
Alpina ..	286	40½	6,905	3.9	276.86	315.62	13 10 10
Atlanta ..	252	36	5,635	4.7	266.90	304.26	13 6 10§
Hispaya ..	365	52	6,374	3.6	241.69	275.52	12 1 8
Kentucky ..	281	40	6,908	3.9	239.51	275.04	11 19 6‡
India ..	244	34½	1,578	4.9	225.30	252.75	11 5 3
Averages of herd of 26 cows ..	308	43½	8,084½	4.6	371.03	426.39	18 14 0‡

* Milk at 8d. a gallon, £49 18s. 1d.

† Was sick a few days.

‡ Suffered from lameness.

§ Sold when yielding 16 lbs. milk daily.

© Milk at 8d. a gallon, £26 18s. 11d.

Season 1914-15.

Heifers.

Name.	Days in Milk.	Weeks in Milk.	Milk in lbs.	Tests.	Butter Fat (lbs.)	Commercial Butter (lbs.)	Values.
							£ s. d.
Pipio ..	334	47½	6,802	4.8	326.37	372.06	16 6 4
Tennessee ..	311	44½	6,706	4.2	282.88	322.48	14 2 10
Samorna ..	365	52	5,490	4.9	271.76	300.80	13 11 9
La Reina ..	342	48½	5,070	5.1	261.96	298.63	13 1 11*
Mongolia ..	301	43	5,399	4.2	244.95	279.24	12 4 11
Sylvia ..	301	43	4,807	4.7	235.79	268.80	11 15 9
Tuckahoe ..	322	46	4,374	4.7	206.38	235.27	10 6 4
Averages of herd of 7 heifers ..	325	46½	5,591	4.6	261.44	298.04	13 7 1†

* Calved two months prematurely.

† Milk at 8d. a gallon, £13 12s. 8d.

SHEEP AND WOOL TERMS.

By H. W. Ham, Sheep Expert.

Lambs.—Young sheep in their lambs' fleece, up to six months old. Speaking technically, the term "lambs" should cease to apply immediately the mother's milk fails. But ewes vary in the time they retain their milk. Favorably situated, many retain it up to six months. On cold, overstocked pastures, they often fail in twelve weeks.

Five months, however, is the average period of lactation, and the majority of lambs are shorn and become "weaners" at this age.

Woolly Lambs.—Lambs prematurely weaned, and therefore forced to live entirely on natural pasture at an early age, and found low in condition. These and older store lambs, while carrying their lambs' fleece, are known as "woolly lambs." The same lambs, though, if immediately shorn, would come under the more extended term of "weaners," apart from the fact of their age.

Shorn Lambs are usually shorn to facilitate fattening, but still sucking the mothers.

Suckers are small, prime lambs, subsisting almost entirely on the mothers' milk, and unable to live and maintain their condition apart from the mother.

Lambs commence nibbling at the pasture when about twenty-one days old.

Lambs is also used as a wool term describing young winter-grown wool not yet affected by summer's heat and grass seed. As a rule, this wool is exceedingly soft, free, and elastic, and outwardly carries a "tippiness" and a "pointed lock" peculiar to lambs' wool. Age alone does not decide the lamb stage.

Summer Lambs are born out of season, during summer, after general shearing time. They carry a fleece showing the "lambs' tip" more or less affected by summer heat, seeds, &c. It lacks the necessary length of staple to be classed as "hogget wool." If these lambs are shorn at any time, and weaned, they would be known as "weaners."

Weaners.—Young, shorn sheep, separated from and able to subsist apart from the mother.

This term has a wide application. Owing to various breeds and varieties of climate, lambing occurs over wide areas from early autumn, with merino sheep, to spring time, in British breeds. When conditions are unfavorable, ewes only retain their milk up to three months; thus the weaner stage often commences from as young as twelve weeks, and continues up to the time of fully developing their two permanent teeth, usually at about one year and three months.

Considering the comparatively adverse conditions often following on weaning time in most parts of Australia, young sheep thrive better when relieved of whatever fleece they may have at the time of separating them from the ewes, usually during the closing week of shearing. This fact of being shorn is the main distinction between "weaners" and "hoggets."

A weaner fleece has a shorn tip, and consequently, when well treated, a level "blocky tip," each fibre being of the same length.

Although not always possessing the length of staple found in hogget wool, it is superior in every other detail, being, as a rule, sounder, of better combing qualities, and more free from seeds and burrs.

Weaners produce the most superior wool grown.

As explained under Hoggets, the custom has been growing, in cataloguing wool, to use the H (hoggets) to denote the contents of the bale to be from young sheep of the second shearing. W would indicate wethers.

Hoggets.—Young sheep born at, or prior to, one shearing, not shorn, and carrying their fleece until the next.

In a literal sense, all young sheep on leaving the mother's milk are weaners, but "weaners" are not "hoggets."

The term "hogget" is really a wool term, indicating a bulky fleece of fifteen to eighteen months' growth of wool, of exceptional length of staple in proportion to its degree of fineness.

If it were not for these peculiarities of fleece, "hoggets" could come under the term "weaners" also.

In wool catalogues the letter H (hoggets) is used often in describing all young wool, excepting "lambs'."

For instance, E H (ewe hoggets) denotes sex and age. It is not taken that the bales necessarily contain hogget wool, although they may do so. It is more often found weaner wool, but the letter W has been always used to indicate wethers as 4 and 6 T. W. (two and three-year-old wethers), and the H is therefore used to cover weaners, hoggets, and summer lambs.

Hogget fleeces show a rather wasty tip, as compared to weaner fleeces, due partly to the lamb's tip not having been shorn, but mainly to having passed through summer with the extra length of staple.

The production of this class of wool has decreased greatly of late years. Only small parcels are now occasionally found among cross-bred wools.

In the past the demand for wools of extra length, fine wools especially, induced many Merino breeders to produce this class of wool. But from time to time several disadvantages manifested themselves. When weaned, these hoggets commenced the summer with a fleece which soon became, in good grass years, a collection of seeds and burrs. The fleece became a burden and torment during summer, and a very heavy tax on travelling to and from water and feed in dry autumns. Frame development became checked, and the staple consequently often found unsound at shearing time. The extra price for the fleece even then never compensated for these disadvantages, and as more length and "shaftiness" gradually became bred into Merino sheep in general, hogget wool became more and more neglected by manufacturers, and the custom to leave lambs unshorn has gradually been discontinued.

"Two Teeth," "2 Teeths," "2 T's."—Young sheep showing their first two permanent teeth, fully developed, usually at about one year and three months old.

Breed of sheep, months of year lambed, varying seasons, varieties of pasture, &c., all cause more or less variation in the time at which the two first permanent teeth appear, and to some extent the other teeth.

AN INSECT PEST OF LUCERNE.

Cockschafer Grubs (*Heteronyx piceus*, Blanch.)

By C. French, Jun., Government Entomologist.

During the last few months, many lucerne-growers at Werribee have suffered considerable losses by the depredations of insect pests. On making an inspection of the affected areas, I found that in many instances, the plants were dying out, owing to the leaves having been



Lucerne Plants showing Damage caused by Cockschafer (*Heteronyx*) Larvae.

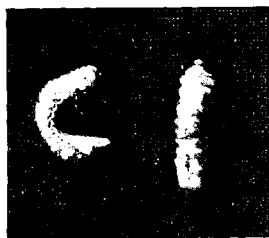
practically eaten away. Close to each plant, 1 or 2 inches below the surface, numbers of cockschafer grubs were found. These were of a dirty white colour, and measured from $\frac{3}{4}$ to an inch long. In one spadeful of earth, nearly two dozen grubs were observed. The surface

of the ground, where the grubs were plentiful, was perforated with thousands of holes, nearly all containing the insects.

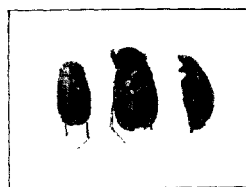
The grubs live on the roots of native and other grasses. They seem to confine themselves to particular patches of the soil, usually where manure has been rather plentifully used. The perfect insect is of a light-brown colour, shining, and measures $\frac{3}{4}$ -inch long by $\frac{1}{4}$ -inch wide. The female is usually larger than the male. When the perfect insects leave the soil, usually in the hottest months, they are to be seen towards dusk swarming around the tops of the eucalyptus trees, and when a strong wind is blowing, they are often blown out to sea and destroyed. Last season, at many places along the coast, they were to be seen in thousands washed up along the beaches, having been blown out to sea and then washed up by the tide.

The damage done at Werribee this year was, no doubt, caused by the beetles being blown from grass-lands in the vicinity. The exceptionally dry season was also favorable to the spread of these insects; in very wet seasons many of the grubs are destroyed by a fungus disease.

When a lucerne crop is badly affected with these grubs, it is advisable to have it cross scarified, if practicable, harrowed and then rolled. A small lucerne patch growing at the Research Farm at Werribee was



Larvae of Cockschafer.



Perfect Insects.

attacked by the grubs. The above-named methods were used, and the results were very satisfactory; the plants are now throwing out new foliage. Keeping the ground continually worked is absolutely necessary, as it exposes the grubs to the birds. When some of the lucerne crops were being harrowed lately the seagulls (Jamieson's Silver Gull) came day after day and gorged themselves with the grubs. Other insectivorous birds, such as robins, magpies, plovers, &c., which are fairly numerous on the Werribee farms, are ever on the watch for the grubs that are turned up.

Reports have recently come to hand of the grubs attacking wheat. The trouble is generally in patches. They eat out a small space, measuring usually only a few yards in circumference, and then start on another one. They feed on the roots of plants, and sometimes come up and destroy the foliage when the crops are a few inches or so in height.

As a remedy, I would suggest cutting up lucerne, grasses, succulent weeds, &c., into small pieces, and dipping them into arsenate of lead

(1 lb. to 30 gallons of water). These poisoned baits could then be spread over the affected area. As a precaution, cattle should be kept from the fields where the baits are scattered. A plan which has given good results is to water the plants, if only small patches are affected, with arsenate of lead. If the crops are completely eaten out, it would be advisable to adopt the means recommended for destroying the grubs in lucerne crops.

Some species of *Heteronyx* cluster on the tops of the eucalyptus trees, often stripping them of every young leaf.

FARM-YARD MANURE.

By R. T. McKenzie, Dairy Supervisor.

It is a notorious fact that many farmers under-estimate the value of farm-yard manure, with the result that much valuable fertilizing material goes to waste every year on the farms of this State. It is no uncommon sight to see great heaps of manure, the accumulation of many years, lying about, without any attempt made to put same to profitable use. In fact, in some cases it is looked upon as a nuisance, the farmer being content with getting it away from the proximity of his milking sheds and other places. In cases where farmers do make an endeavour to utilize the farm-yard manure, their efforts are, to a large extent, neutralized by faulty methods of storage. They are, for the most part, ignorant of the fundamental bacterial changes which manure undergoes subsequent to being voided by the animal. It is in extremely rare cases that any attempt is made to save the liquid manure; yet this is by far the more valuable of the two, as analyses from American sources indicate, viz.:-

	Nitrogen.	Phosphoric acid.	Potash.
Solid horse manure contains	.. .495	.. .13	.. .200
Liquid horse manure contains	.. 1.20	.. trace	.. 1.24
Solid cow manure contains	.. .324	.. .09	.. .124
Liquid cow manure contains	.. .95	.. .013	.. .79

The above table demonstrates that the liquid excrement is much richer in plant food than the solid, consequently every effort should be made to retain it. Once, farm-yard manure was practically the only manure used; this was prior to the advent of the artificial fertilizer, which is applied in a way that is easily assimilated by the soil, and makes its effect immediately apparent. But with farm-yard and organic manure it is not until they are decomposed that the beneficent results are manifested.

The great advantage that organic manure has over artificial fertilizers is that, besides furnishing plant food, it improves the physical, chemical, and biological nature of the soil, by increasing the humus. It is this

humus in the soil which has the faculty of absorbing water quickly and arresting evaporation, makes the soil in which humus is abundant more retentive to moisture. Humus in soil can be increased by the addition of farm-yard and other organic manure, hence the importance of the proper care and use of farm-yard manure. The primary factor to be considered in storage of manure is the control of fermentation, which causes the decomposition.

There are two processes of fermentation, namely, that caused by aerobic bacteria, which cannot live or have their being without access to the air, and anaerobic bacteria, which flourish and develop only when atmospheric air is excluded. It is the first class of bacteria that cause the extreme heat, which is very undesirable, inasmuch as the heat liberates the nitrogen, the most valuable element. It also incidentally destroys the humic acid. The conditions favorable for the development of aerobic germs are when the manure is loose and contains little moisture. Anaerobic fermentation, on the other hand, is carried on best when the manure is compacted and moist, thereby preventing the incursion of air, so that decomposition is carried on without any great heat, thus preventing the loss of nitrogen and humic acid. It is obvious, therefore, that the farmer should store manure in such a way as to prevent aerobic, and encourage anaerobic fermentation.

This cannot be done under the present haphazard fashion of piling manure. A good method of storing manure is to build a brick or concrete pit of sufficient size to meet the requirements of the farm, making provision for the catchment of the liquids.

Another inexpensive method is to make a compost heap, where the manure is spread in layers until the needed size is reached, a few inches of soil being thrown on to exclude the air. Provision should be made for the catchment and return of the seepage water to the heap.

Another good method, where practicable, is to apply the manure in a fresh condition straight from the stable or byre, spread in narrow strips, which should be ploughed in about once a fortnight.

If farm-yard manure is conserved in some such way, it will be of much greater value than when allowed to accumulate in the present loose fashion.

THE cow and the acre are the twins of the dairy farm, and must both be treated fairly. Both must earn their keep. Each helps the other when properly trained together. If one is poor it robs the other.—*Hoard's Dairyman.*

TESTING the best cows in a herd has value only to breeders selling stock as an advertisement, but testing the whole herd is of the greatest value to all dairymen as an economical proposition; there are greater differences between the yield of individual cows of the same breed than between the average yield of different breeds.—*Hansen's Dairy Bulletin.*

FIFTH VICTORIAN EGG-LAYING COMPETITION, 1915-1916.

Commenced 15th April, 1915; concluding 14th April, 1916.

CONDUCTED AT THE BURNLEY SCHOOL OF HORTICULTURE.

CONCLUSION OF WINTER TEST.

Six Birds. Pen No.	Breeds.	Owner.	Totals.			Position in Competition.
			15. 4. 15 to 14. 7. 15	15. 7. 15 to 14. 8. 15	Four months.	
LIGHT BREEDS.						
WET MASH.						
21	White Leghorns	E. B. Harris	367	144	511	1
53	"	W. G. Swift	373	132	505	2
35	"	G. McDonnell	364	139	503	3
2	"	E. A. Lawson	368	122	490	4
19	"	L. G. Broadbent	388	101	489	5
5	"	J. J. West	352	132	484	6
34	"	H. McKenzie and Son	341	131	472	7
8	"	C. J. Jackson	350	117	467	8
9	"	J. Schwabb	345	117	462	9
10	"	A. E. Tuttleby	332	129	461	10
6	"	F. Doldissen	341	119	460	11
7	"	Marville Poultry Farm	345	114	459	12
16	"	N. Burston	320	136	456	13
42	"	W. M. Bayles	346	110	456	
18	"	D. Adams	326	118	444	15
26	"	A. Mowatt	314	127	441	16
44	"	Mrs. F. M. Oliver	313	120	433	17
4	"	R. Hay	305	118	423	18
32	"	F. Hodges	299	120	419	19
60	"	H. C. Brock	289	129	418	20
25	" (5 birds)	Giddy and Son	307	108	415	21
50	"	A. F. Silbereisen	328	82	410	22
1	"	John Hood	281	122	413	23
39	"	Mrs. H. Stevenson	283	119	402	24
49	"	W. M. Sewell	279	117	396	25
11	"	Bennett and Chapman	280	112	392	26
24	"	J. B. Bridgen	268	122	390	27
3	"	Lysbeth Poultry Farm	261	126	389	28
51	" (5 birds)	J. H. Gill	284	102	386	29
33	" (5 birds)	A. H. Mould	279	102	381	30
28	"	A. W. Hall	266	113	379	31
15	"	R. Lethbridge	288	90	378	32
54	"	H. N. H. Mirams	269	100	378	34
13	"	W. G. Clingin	253	121	374	
23	"	T. Hustler	258	114	372	35
39	"	Fulham Park	264	108	372	
46	"	W. G. Osburne	250	121	371	37
57	"	C. J. Beatty	243	121	364	38
35	"	B. Mitchell	268	92	360	39
52	"	W. N. O'Mullane	244	110	354	40
43	"	A. A. Sandland	235	64	349	41
47	"	H. I. Merrick	257	79	336	42
20	"	J. C. Armstrong	227	104	331	43
38	"	R. W. Pope	216	105	321	44
45	"	Weldon Poultry Yards	254	65	319	45
41	"	South Van Yean Poultry Farm	218	100	318	46
40	"	J. A. Donaldson	197	118	315	47
58	"	C. C. Dunn	253	61	314	48
27	"	Thirkell and Smith	201	112	313	49
14	"	J. A. Stahl	193	114	307	50
12	"	W. Flood	234	71	305	51
48	"	G. Hayman	201	101	305	
22	"	Berry	190	110	300	53
27	"	S. Duscumb	198	82	280	54
56	"	A. Ross	167	110	277	55
31	" (5 birds)	C. Hurst	168	91	259	56
	"	L. McLean	103	93	196	57
Total			15,798	6,206	22,064	

FIFTH VICTORIAN EGG-LAYING COMPETITION, 1915-16- *continued.*

Six Birds. Pen No.	Breeds.	Owner.	Totals.			Position in Competition.
			15.4.15 to 14.7.15.	15.7.15 to 14.8.15.	Four months.	

LIGHT BREEDS.

DRY MASH.

80	White Leghorns ..	W. H. Robbins ..	424	137	561	1
89	" ..	E. Macbrown ..	332	113	450	2
78	" ..	H. Handbury ..	310	119	429	3
68	" ..	H. McKenzie and Son ..	318	107	423	4
64	" ..	W. M. Bayles ..	318	103	419	5
72	" ..	Mrs. E. Zimmerman ..	297	97	394	6
79	" ..	Lysbeth Poultry Farm ..	294	99	393	7
66	" ..	E. A. Lawson ..	280	96	376	8
76	" ..	A. A. Sandland ..	253	110	363	9
63	" ..	A. H. Padman ..	291	148	349	10
65	" ..	Thirkell and Smith ..	230	109	339	11
71	" ..	Moritz Bros. ..	247	73	320	12
67	" ..	C. C. Dunn ..	229	82	318	13
62	" ..	Benwerren Egg Farm ..	194	119	313	14
61	" ..	Mrs. H. Stevenson ..	162	139	301	15
74	" ..	J. H. Gill ..	130	119	249	16
75	" ..	Fulham Park ..	156	81	237	17
77	" ..	South Yan Yean Poultry Farm ..	109	109	218	18
73	" ..	C. L. Lindrea ..	75	125	200	19
Total ..			4,555	2,087	6,642	

HEAVY BREEDS.

WET MASH.

100	Black Orpingtons ..	J. H. Wright ..	398	126	524	1
81	" ..	Mrs. T. W. Pearce ..	402	113	515	2
97	" ..	Marville Poultry Farm ..	351	146	507	3
86	" ..	C. E. Graham ..	334	142	476	4
90	" (5 birds) ..	Oaklands Poultry Farm ..	331	124	455	5
94	" (5 birds) ..	D. Fisher ..	340	110	450	6
85	" ..	H. H. Pump ..	326	119	445	7
88	" ..	J. McAllan ..	294	126	420	8
89	Rhode Island Reds ..	E. W. Hippe ..	291	122	413	9
99	Black Orpingtons ..	L. McLean ..	281	111	392	10
87	" ..	W. C. Spencer ..	285	105	390	11
93	" ..	L. W. Parker ..	233	157	390	
91	" ..	A. Greenhalgh ..	281	85	366	
84	" ..	Cowan Bros. ..	241	111	352	14
95	Silver Wyandottes ..	W. H. Forsyth ..	249	102	351	15
96	White Orpingtons ..	Stranks Bros. ..	269	80	349	16
92	Black Orpingtons ..	J. Ogden ..	169	139	308	17
83	" ..	G. Mayberry ..	192	80	272	18
98	Faverolles ..	K. Courtenay ..	117	109	226	19
82	White Wyandottes ..	J. B. Bridgen ..	14	90	104	20
Total ..			5,408	2,297	7,705	

Report for Month Ending 14th August, 1915.

The weather conditions for the month were seasonable. There was much north-west wind, with light rains, and an occasional clear day. Temperatures ranged from 30 deg. in the early morning to 62 deg. at 2 p.m. There has been an entire absence of illness amongst the birds this month. Some Leghorns are still moulting, but generally the birds are hard and doing well. Three pens of heavy breeds were successful in passing the world's record winter test for heavy breeds, which stood at 502. Mr. J. H. Wright's pen finished with 524, Mrs. T. W. Pearce's 515, and Marville Poultry Farm 507. Mr. Robbins' Leghorns failed by four eggs to reach the world's record put up by Mr. Gill's pen last year. One of Mr. Robbins' pullets took ill on 3rd July, and was 35 days before returning to lay. The average for the month is again well ahead of that of last year. The rainfall for the month—152 points.

Department of Agriculture,
Melbourne, Victoria.

A. HART,
Chief Poultry Expert.

ORCHARD AND GARDEN NOTES.

Ed. E. Pescott, F.L.S., Principal, School of Horticulture, Burnley.

The Orchard.

The winter seasonable works, such as pruning and planting, with the exception of citrus fruits in the latter case, will now be completed; and the time has arrived for the new season's work to be commenced.

The spring ploughing should now be proceeded with as early as possible, so as to conserve all soil moisture. If the ploughing be delayed, it frequently happens that, owing to dry weather setting in, the soil surface becomes hardened and compacted, and in that condition it is very difficult to turn over. Cultivation should quickly follow ploughing, so that there shall be no lumps or clods on the surface. Where it is intended to use stable manure, or to spread fresh soil in the orchard, this should be done before ploughing, so that it may be well ploughed under.

As soon as cover crops are in full flower, they should also be ploughed in.

If the soil be warm, citrus trees of all descriptions may be planted, the ground having been previously prepared for their reception. The planting of these trees may be spread over September and October, and in cooler districts they may be left until November.

SPRAYING.

Peach aphid will be making its appearance on peach, nectarine, and Japanese plum trees, if it has not already done so. As soon as it appears frequent sprayings with a nicotine solution will be required to keep it in check. It is advisable to spray early, and to spray a second time a few hours after the first spraying has been completed. After the first spraying the aphides that remain alive generally endeavour to find a more congenial position. These moving ones, as well as the weakened ones, are then readily dealt with by the second application. Red oil emulsion should not be used, as this is only a winter spray.

As soon as the flower buds of the apple and pear are opening, these trees should be sprayed with Bordeaux mixture for black spot. Peach and nectarine trees will need a Bordeaux spraying for leaf curl, and plum trees also, for plum or prune rust.

In spraying peach trees for peach aphid and leaf curl, or for aphid and prune rust, the tobacco solution and Bordeaux mixture may be safely used as a mixture without any fear of damage to the trees.

In some cases the copper-soda spray is preferred by orchardists, in lieu of Bordeaux mixture. It is certainly good in many instances, and where fresh lime is not procurable, or where the climate is dry, the copper-soda mixture is useful as a fungicide. It is, however, not so adhesive as Bordeaux, and is readily washed off by rain or heavy dews. The copper-soda mixture should not be used on stone fruits, particularly peaches, as the foliage of these is too delicate for the use of this spray. The recognised formulæ are—

Bordeaux: 6 lbs. bluestone, 4 lbs. fresh lime, and 50 gallons of water.

Copper-soda: 6 lbs. bluestone, 8 lbs. washing soda, and 50 gallons of water.

If the winter spraying for the *Byrobia* mite has been neglected, the trees should be given a good spraying with a nicotine solution or with pine spray, soaperine, or other similar preparation.

GRAFTING.

The work of grafting should be completed early in the month. The most useful method of re-working old trees is to cut the head right away, leaving only the stump. Then grafts can be put in according to the fancy of the grower. The old method of cleft grafting has been superseded by the bark or crown graft. The latter method does not cause any damage to the wood, and thus, with care, no rotting can take place. The best method of bark grafting is the saddle graft; that is, the graft is inserted in the bark, and a strip of bark is carried right across the trunk and inserted in the bark on the opposite side. This method is much slower than the ordinary bark graft, but it insures a much quicker healing over of the old stump.

THRIPS.

The thrips pest caused very considerable loss of all classes of fruit last season, and fruit-growers are inquiring as to the possibility of another invasion this year. It is practically impossible to forecast insect visitations, but it is well known that in a dry spring there is always the possibility of a great increase of this pest. The facts that the past winter has been fairly uniformly wet and also that up to the present time no thrips can be detected in the early blossoms would point to a reduction of the pest this year. The thrips is one of the pests that must be prevented from coming, as it is too late to take any action when the pest appears. It was found in several localities last year that, where the trees had been well sprayed with red oil in the winter time, this pest was not in evidence to any extent on the sprayed trees, and when it did appear, it had evidently spread from unsprayed trees.

Experiments in California have shown that the thrips were well controlled by spraying with Distillate Oil Emulsion and with nicotine solution. The nicotine solution used was the American preparation known as Black Leaf 40, and it was sprayed at the time of flowering. The best results were obtained from a combination of these two sprays at a time when the buds were just loosening their scales preparatory to bursting. This seems to be the critical time, as the larvæ are just hatching from the eggs, and naturally they are very weak.

In the absence of Distillate Oil Emulsion, which is not yet procurable in Australia, some of the following remedies may be tried:—Lime sulphur, nicotine, benzole emulsion, soaperine, or pine spray.

A series of experiments is now being carried out at the Burnley Gardens, by means of which it is hoped to obtain data which will assist in keeping this pest in control.

The Vegetable Garden.

Frequent cultivation will be necessary this month, especially after waterings.

Wherever such pests as tomato weevil, cabbage moth, cabbage aphid, cut worms, &c., were prevalent in the soil last season, it would be advisable, before planting, to give the beds a dressing of such substances as

will tend to reduce or eradicate them. These preparations include lime, pestend, tobacco dust, and manurial insecticide.

Any seedlings that are ready may be planted out; tomato plants may be planted out under shelter until the frosts are over. At the end of the month a sowing of French bean seeds may be made. Seeds of peas, broad beans, beet, cabbage, kohl rabi, radish, turnip, cauliflower, lettuce, carrot, parsnip, &c., may be sown in the open. Seeds of melons, cucumbers, pumpkins, marrows, and similar plants may be planted in frames for transplanting after the frosts have gone.

The Flower Garden.

Ordinary garden work this month includes frequent and constant cultivation of the beds. The hoe should be kept busily employed to prevent surface caking. The soil will be surcharged with moisture after the rains, and if this be conserved by regular hoeing, much summer watering will be avoided. The hoeing will also kill all weeds, which is a necessity.

Wherever it appears, the rose aphid will require to be checked by spraying with some nicotine or soapy solution. As soon as any aphides are noticed they should be sprayed, and when the plants have all been sprayed, they should be gone over a second time, on the same day if possible, so as to do the work thoroughly.

For rose scale the lime-sulphur spray be used to clean the old stems, but the spray should not touch the young growths or buds.

Roses may now be disbudded of their superfluous growths, by removing all crowded or badly-placed shoots.

A watch should be kept for mildew, which should be dusted with sulphur as soon as it appears. It is also a good plan to dust some sulphur on the soil, so that the fumes may also act on the fungus.

Chrysanthemums, cannas, and other herbaceous plants may be planted out, dividing the clumps into small sections; gladioli, dahlias, for early flowers, seedlings, and seeds of tender annuals may also be planted.

REMINDERS FOR OCTOBER.

LIVE STOCK.

HORSES.—Continue to feed stabled horses well, add a ration of green-stuff. Rug at night. Continue hay or straw, chaffed or whole, to grass-fed horses. Feed old or badly-conditioned horses liberally. If too fat, mares due to foal shortly should be put on poorer pasture. Mares with foals at foot should receive a good ration of oats daily. Those intended for breeding, if not already stunted, should be put to the horse. Colts not intended to be kept as stallions should be gelded. Working horses due for a spell should be turned out to grass.

CATTLE.—Except on rare occasions, rugs may now be used on cows at night only. Continue giving hay or straw, if possible, to counteract the effect of green grass. Be prepared for milk fever. Read article in *Year-Book of Agriculture*, 1905, page 314. Give calves a warm dry shed and a good grass run. Continue giving milk at blood heat to calves. Be careful to keep utensils clean, or diarrhoea will result. Do not give too much milk at a time for the same reason. Feed regularly with regard to quantity and time. Give a cup of limewater in the milk to each calf, also place crushed oats or lucerne hay in a trough so that they can eat at will.

PIGS.—Supply plenty of bedding in warm well-ventilated styres. Keep styres clean and dry, and feeding troughs clean and wholesome. Sows may now be turned into grass run. Sows suckling young should be well fed to enable them to produce plenty of milk. Give young pigs pollard and skim milk in separate trough as soon as they will take it, and keep them fattening from the start to get them off as early as possible. Give a tablespoonful of bone meal per 100 lbs. live weight in food daily. If pigs are lousy dress with kerosene emulsion or sulphur and lard, rubbing well into crevices of skin, and disinfect styres. Pig breeding and feeding should be very profitable for a long time to come, and it should be safe to launch out now.

SHEEP.—Shear early where weather will permit. This will allow sheep to commence a better fleece and recover in condition from past season. Shear lambs not to go for export at once, and avoid grass seeds. Avoid undue dust in yarding for shearing. Well-bred fleeces free from dust and burr should be skirted carefully, the better the class of wool the greater the need. Fleeces dry and earthy on the backs need only stains removing; there is little advantage in removing burr on these. It is better management to have ample table room, and the extra hands skirting carefully than to hastily tear off unnecessary wool and then employ men at the piece table to sort "broken fleece" and "first pieces." All ewe stains must be removed and wether stains from bellies. Separate all coarse fleeces from the finer sorts, and in merinoes the yellow and mushy ones from the shafty and bright. Skirt all hairy thighs from crossbred fleeces. Press in neat bales, not "sew-downs." Brand neatly and not with sheep branding oil or paint. Stencil plates and branding ink will be supplied by brokers if requested to do so.

POULTRY.—The bulk of incubation should cease this month—late chickens are not profitable. Devote attention to the chickens already hatched; avoid overcrowding. Feed with dry mash. Also add plenty of green food to ration, ordinary feeding to be 2 parts pollard, 1 part bran, and a little animal food after the first fortnight. Feed ground grain, such as wheat, bulled oats, maize, and peas, which should be fed in hopper to avoid waste. Grit or coarse sand should be available at all times. Variety of food is important to growing chicks; insect life aids growth. Remove brooders to new ground as often as possible; tainted ground will retard development.

CULTIVATION.

FARM.—Plant main crops of potatoes in early districts and prepare land for main crop in late districts. Fallow and work early fallow. Sow maize and millets where frosts are not late, also mangolds, beet, carrots, and turnips. Sow tobacco beds and keep covered with straw oressian.

ORCHARD.—Ploughing and cultivating to be continued, bringing surface to a good tilth, and suppressing all weeds. Spray with nicotine solution for peach aphid, with Bordeaux mixture for black spot of apple and pear, and with arsenate of lead for codlin moth in early districts.

VEGETABLE GARDEN.—Sow seeds of carrot, turnip, parsnip, cabbage, peas, French beans, tomato, celery, radish, marrow, and pumpkins. Plant out seedlings from former sowings. Keep the surface well pulverized.

FLOWER GARDEN.—Keep the weeds down and the soil open by continued hoeing. Plant out delphiniums, chrysanthemums, salvia, early dahlias, &c. Prepare ground for digging and manuring for autumn dahlias. Plant gladioli tubers and seeds of tender annuals. Spray roses for aphid and mildew.

VINEYARD.—This is the best month for field grafting. If stocks bleed too copiously, cut off 24 hours before grafting. Make sure that scions are fresh. Placing butts in clean water for a few days before grafting is recommended. Field grafts must be staked, to avoid subsequent straining by wind and to insure straight stem for future vine. Stakes are also necessary for grafted rootlings for same reasons. Temporary stakes 3 feet long will suffice. Keep a sharp look out for cut worms. (See *Journal* for July, 1911, and also October, 1913.) Dishud and tie up all vines, giving special care to young plantations. Beware of spring frosts. (See *Journal* for September, 1910.)

Conclude spring cultivation (second ploughing or scarifying and digging or hoeing round vines). Weeds must be mastered and whole surface got into good tilth. Sulphur vines when shoots 4 to 6 inches long.

Cellar.—Taste all young wines; beware of dangerous symptoms in unfortified fruity wines, which may need treatment. Fill up regularly all unfortified wines.